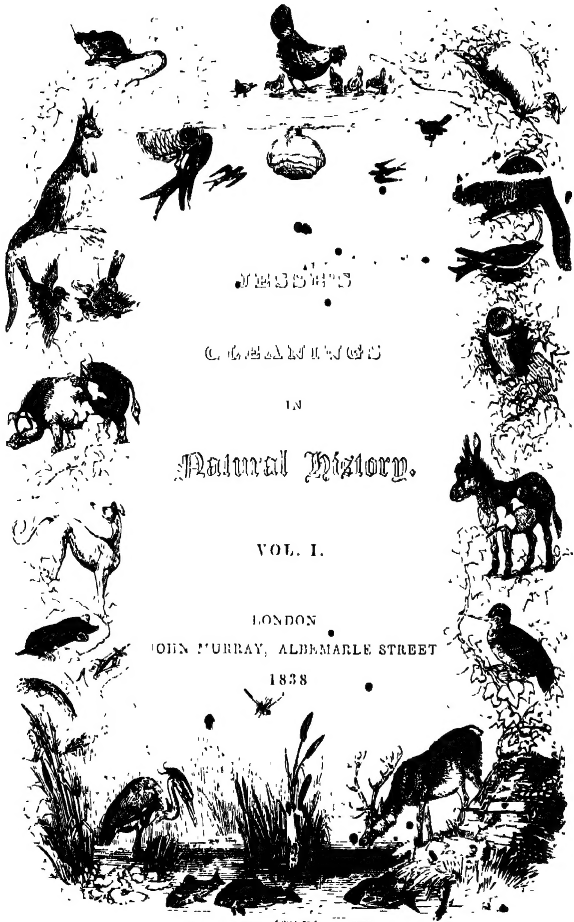


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KING CHARLES'S SWING, HAMPTON COURT PARK


JESSE'S
GLEANINGS
IN
Natural History.
VOL. I.
LONDON
JOHN MURRAY, ALBEMARLE STREET
1838

GLEANINGS

IN

NATURAL HISTORY;

BY

EDWARD JESSE, Esq. F.L.S.

SURVEYOR OF HER MAJESTY'S PARKS, PALACES, &C

Not a tree,
A plant, a leaf, a blossom, but contains
A folio volume. We may read, and read,
And read again, but still find something new,
Something to please, and something to instruct,
E'en in the noisome weed

A NEW EDITION IN TWO VOLUMES.

VOL. I.

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

MDCCCXXXVI

Go, little book! and in the lists of Fame
  Where strove the mightiest, run thy destined race;
Where deathless bays shall crown the victor's name,
  Show, unabash'd, if bashfully, thy face;
Where, should scant deed achieved scant guerdon claim,
  Thy true intending yet may win thee grace.
Go! praised enough, and proud, if thine the power
To please one feeling heart for one calm, thoughtful hour.

PRINTED BY W. NICOL, PALL MALL.

TO

WILLIAM YARRELL, Esq. F.L.S.

THESE VOLUMES ARE DEDICATED, IN RECOLLECTION

OF MANY AGREEABLE AND INSTRUCTIVE HOURS

PASSED IN HIS SOCIETY,

AND AS A TOKEN OF FRIENDSHIP AND REGARD

PREFACE.

I trust that it will not be imputed to vanity, if I express the gratification I feel in having a fourth edition of my "Gleanings in Natural History" called for. One of the chief objects I had in view in writing them, was to pourtray the character of animals, and to endeavour to excite more kindly feelings towards them. I have much pleasure in thinking that this object has in some degree been answered, and that many persons have been induced to turn their attention to those faculties in animals, which entitle them to a higher place in the scale of intellect than they had been accustomed to allow them. The numerous well authenticated facts which have been brought forward of fidelity, sense, discrimination, courage and perseverance, under peculiar and unusual circumstances, should induce every one to treat the animal creation with tenderness, and to mitigate those miseries and sufferings to which they are too much exposed. That there will be a fearful day of reckoning for those who have inflicted wanton and

unnecessary pain on those objects which were given by a bountiful Providence to be used and not abused, I think no one can entertain a doubt.

It has ever been my opinion that no time can be more advantageously, and at the same time more innocently employed, than that which is devoted to the study of Natural History.

From an habitual and watchful survey of the power that created, the wisdom that allotted to each its task, and the goodness that from day to day protects the works of Omnipotence, we may learn to love, and to trust in the Author of our being. If these objects have been attained, I shall rejoice in the taste which I have fostered in myself of seeing *good* in all the works of Nature, and in my endeavours to inculcate it in the young and thoughtless.

It has been well said, that Religion and Nature, like two sisters, should always walk hand in hand, that they may reciprocally aid and assist each other. It is with this impression that I have ventured to draw the attention of my readers, in a few instances, to those beautiful traits in Nature which prove (at least to my feelings) not only that there is a Great Parent of the universe, but that He is always promoting the benefit of His creatures.

Feebly as may be my attempts to do good, I should greatly regret if I thought they would be altogether

useless. The human mind, perhaps, knows no pleasure greater than the consciousness of having been useful to others.

In the present edition, a considerable addition has been made of anecdotes which have been communicated to me by many kind friends, to whom my acknowledgments are due. I have also to return my grateful thanks to Dr. William Roots, of Kingston-on-Thames, and William Yarrell, Esq., for the able assistance they have afforded me in my endeavours to elucidate the Natural History of the Eel.

Hampton Court, May 10th, 1838.

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VOL. I.



GLEANING

NATURAL HISTORY.

' There are still in thee,
' Instructive Book of Nature! many leaves
' Which yet no mortal has perused.'

WE* have often conversed together on the subject of Natural History, and you are aware how very desirous I have been that it should become one of your favourite studies. I have, therefore, devoted a few hours of the present winter in putting together some of the remarks which I have from time to time made or collected on the animal creation—a study not only delightful in itself, but which tends to promote good and kind feelings, and to raise our affections to that Being by whose infinite power and wisdom all things were made. Indeed, the more minutely we search into the history, habits, and economy of the birds, animals, and insects, which surround us, the more reason shall we have to admire the various demonstrations of the Creator's wisdom in the composition,

* This work was originally begun in a series of letters to my daughters.

order, and harmony, of each of them, however insignificant they may appear to us. We are led to see that the minutest things in nature are appointed to some particular end and purpose, and that the 'Deity 'is as conspicuous in the structure of a fly's wing, 'as he is in the bright globe of the sun itself.' I cannot give you a much stronger proof of this, than by quoting a passage from Derham's Physico-Theology, a book which will both delight and instruct you. Speaking of the formation of insects, he says, 'It is 'an amazing thing to reflect upon the surprising minuteness, art, and curiosity, of the joints, muscles, 'tendons, and nerves, necessary to perform all the 'motions of the legs, the wings, and every other 'part: and all these things concur in minute animals, 'even in the smallest mite and animalcule; and 'having named these animals, why should I mention 'only one part of their bodies, when we have in that 'little compass a whole and complete body, as exquisitely formed, and (as far as our scrutiny can 'possibly reach) as neatly adorned, as the largest 'animals? Let us consider that there we have eyes, 'a brain, a mouth, a stomach, entrails, and every 'other part of an animal body, as well as legs and 'feet, and that all those parts have each of them their 'necessary apparatus of nerves, of various muscles, 'and every other part that other insects have, and 'that all is covered and guarded with a well-made 'tegument, beset with bristles and adorned with neat 'imbrications, and many other fineries.'

It appears almost impossible that any attentive

observer of this exquisite workmanship should not be compelled to acknowledge that it is produced by, and is worthy of, a great, all-powerful, and benevolent Creator, who had some good and wise purpose to answer in everything he did; and surely, when this conviction is once firmly impressed upon your mind, you will find infinite pleasure and gratification in making diligent researches into the works of Nature; convinced as I am that the further your inquiries are carried, the more cause you will have to be delighted with the study, and to acknowledge that the hand which made all these things must be divine.

Another inducement I would hold out to you for the prosecution of this study, is the pleasure you will derive in your solitary walks and rides, from observing the manners and habits of those birds and insects which may fall in your way. An incurious person passes by them, as it were, with his eyes closed; while an attentive observer, and a lover of Nature, has his time and his thoughts delightfully occupied in the contemplation of every insect which crosses his path, and of every bird which he sees near him. He hopes either to find in each of them something heretofore unnoticed, or to admire the beautiful symmetry and elegance of their external appearance, and their different manners and mode of living. Such observations I would recommend you to write down from time to time, however trivial they may appear to some persons. Your diary will always be a source of amusement to you, and one from which, no doubt, some new or useful information may be derived, as

it is quite impossible that any one man alone can investigate the works of Nature; and it is only, therefore, by the united observations of different persons, that those more accurate discoveries can be made, and fresh anecdotes obtained, which are necessary to form a correct natural history. It is to a similar diary of remarks that we are indebted for one of the most delightful books in the English language—I allude to Mr. White's Natural History of Selborne; a work which, whether we consider the useful information it contains, or the elegant and agreeable manner in which it is written, has, and will continue to afford, pleasure and gratification to every lover of Nature, 'as long as her works have power to charm.' I cannot conclude these introductory observations better than by quoting what he says on this his favourite study.

'These pursuits, by keeping the body and mind 'employed, have, under Providence, contributed to 'much health and cheerfulness of spirits, even to old 'age, and have led me to the knowledge of a circle of 'gentlemen whose intelligent communications have 'afforded me much pleasing information.

'He cheerly sings,
'And trusts with conscious pride his downy wings;
'Still louder breathes, and in the face of day
'Mounts up.'

I HAVE found it of infinite use, in the course of my observations on the habits and manners of animals, never to lose sight of the principle, which I hold to be an invariable one, that every created being is formed in the best possible manner, with reference to its peculiar habits, either for self-preservation, or for procuring its food; and that nothing is given to it but what is intended to answer some good and useful purpose, however unable we may be to account for what may appear to us ill-contrived or unnecessary.

With this conviction, I have for some time past been endeavouring to assign a use for the remarkable and, indeed, what appears disproportionate length of the claws of the skylark, and it lately afforded me no small gratification to think that I had discovered the purposes for which it is furnished with them. That they were not intended to enable the bird to search the earth for food, or to fix itself more securely on the branches of trees, is evident, as they neither scratch the ground nor roost on trees.

The lark makes its nest generally in grass fields, where it is liable to be injured either by cattle grazing over it, or by the mower. In case of alarm either from these or other causes, the parent birds remove

their eggs, by means of their long claws, to a place of greater security; and this transportation I have observed to be effected in a very short space of time. By placing a lark's egg, which is rather large in proportion to the size of the bird, in the foot, and then drawing the claws over it, you will perceive that they are of sufficient length to secure the egg firmly, and by this means the bird is enabled to convey its eggs to another place, where she can sit upon and hatch them.*

When one of my mowers first told me that he had observed the fact, I was somewhat disinclined to credit it; but I have since ascertained it beyond a doubt, and now mention it as another strong proof of that order in the economy of Nature, by means of which this affectionate bird is enabled to secure its forthcoming offspring. I call it affectionate, because few birds show a stronger attachment to their young.†

While on the subject of larks, I will mention another curious circumstance respecting them. I have often strained my eyes in watching them while they sang their beautiful notes on the wing, till I could see them no longer.

* It was observed to me that these long claws of the lark might be intended to answer a double purpose—that of enabling the bird to walk with more ease *on* the grass where it frequently harbours.

† Since this was written, I have had a further opportunity of observing the fact respecting the larks removing their eggs; and a friend informs me that, when he was recently in Scotland, a shepherd mentioned having witnessed the same circumstance.

' Up springs the lark,
' Shrill-voiced and loud, the messenger of morn;
' Ere yet the shadows fly, he, mounted, sings
' Amid the dawning clouds.'

If, in his descent, he hears the voice of his mate, you may observe him fall to the earth apparently like a stone. This, however, does not take place during the period of incubation, or before the young birds have left their nest. At those times I have observed that the lark, in his descent, flies along the surface of the field, and alights at some distance from his nest. It is evident that this foresight is given to it by its benevolent Creator for the better preservation of its young; as, if it alighted at its nest, the spot might easily be watched, and its young fall a prey to some marauding ploughboy.

The lark is a great favourite with me, and notwithstanding all that poets have said of the nightingale, it is, perhaps, listened to during its aërial flights with more pleasure than any other songsters we have.

' To hear the lark begin his flight,
' And singing, startle the dull night
' From his watch-tow'r in the skies,
' Till the dapple dawn doth rise;
' Then to come in spite of sorrow,
' And at my window bid good morrow.'

MILTON'S *L'Allegro.*

Pride, like the eagle, builds among the clouds,
But, pleasure, lark-like, nests upon the ground.
YOUNG.

SINCE the preceding paper was written, one of my labourers whom Mr. White would designate as a 'sober hind,' came to tell me that in mowing some grass he had found the nest of a Skylark, with young ones in it, which seemed to have been hatched three or four days. In consequence of a request I had previously made to him, he watched the old birds, and saw them come to their nest and remove their young to a place of greater safety. This they did by taking them up with their feet at different times. I was much pleased with this information, not only as communicating a new and interesting fact in Natural History, but as corroborative of my former statement respecting the uses to which the apparently unnecessary length of the claws of the Lark may be applied.

In further confirmation of this being the case, I will add the following communication made to me by a Clergyman in Sussex, to whom I am indebted for some other interesting facts in Natural History. He says that during the harvest he was riding gently towards Dell Quay in Chichester Harbour, with the late Colonel H—— and his brother; when having passed the Toll-Bar, the road is of good elevation, and separated by a short quick-set hedge on each

side from the fields, over which there was a commanding view. When in this situation, their attention was attracted by a shrieking cry, and they discovered a pair of sky-larks rising out of the stubble, and crossing the road before them at a slow rate, one of them having a young bird in its claws, which was dropped in the opposite field at a height of about thirty feet from the ground, and killed by the fall. On taking it up it appeared to have been hatched about 8 or 9 days. It is evident that the affectionate parent was endeavouring to convey its young one to a place of safety, but that its strength failed in the attempt.

The following anecdote will prove that the Lark is possessed of kindly feelings even towards the young of another species. A Lark which had been brought up in a cage, after having been taken from the nest when very young, was turned out when it was able to fly, and some young Goldfinches put into the cage. The Lark returned to its former abode, and was again put into the cage with the Goldfinches. They were weak and feeble, and the lark not only brooded over them, but fed them.

Many agreeable communications have been made to me since my work appeared before the public, and amongst the rest the following lines descriptive of the Lark. They are from the pen of a young lady, and are too pretty to be omitted.

' Up springs the Lark, and shakes his wings,
' And mounting higher, clearer sings;
' 'Till the small speck eludes the eye,'
' Melted into song and sky.

'And now the straining eye discovers
'Where the tiny warbler hovers.
'As he gently sinks to ground,
'Sudden his wings he closes round;
'And pitching headlong like a stone,
'His flight is o'er,—his song is done.'

The following lines also have always struck me as containing an accurate and charming description of the movements of the Lark, both before and after a sudden shower of rain. I have often witnessed the scene early in the spring, and every lover of nature will have made the same observation.

'Fraught with a transient frozen show'r,
'If a cloud should haply low'r,
'Sailing o'er the landscape dark,
'Mute on a sudden is the Lark;
'But when gleams the sun again
'O'er the pearl besprinkled plain;
'And from behind his wat'ry veil
'Looks through the thin descending hail;
'She mounts, and less'ning to the sight,
'Salutes the blythe return of light.
'And high her tuneful track pursues
''Mid the dim rainbow's scatter'd hues.'

T. WARTON.

Large flights of Larks have been observed in autumn going westward. This is the case more generally, I think, in the inland countries. When I resided in Staffordshire, I had frequent opportunities of noticing this. In cold dry weather in January, Larks will rise, and apparently try to sing. In February they will rise a little way and sing.

'By Nature led,
'A thousand shifts she tries.'*
SOMERVILLE.

ANIMALS which prowl, or move about much in the dark, are furnished with projecting hairs or whiskers from the upper lips, which guide them in their passage through runs in hedges or holes. These hairs serve as *feelers*, and are exactly of such a length, that the body of the animal will pass through any opening which these projecting hairs do not touch on either side. They are very sensitive, and if they are ever so slightly touched while the animal sleeps, it is instantly aware of it. Hares very often make their runs or mews between two strong upright sticks in a hedge, which will just allow them to pass through, without being sufficiently large to admit the passage of a dog, should it be in pursuit. This is a very extrordinary instinct, and shows a great foresight of danger. In passing through this passage at night, these *feelers* must be of great service to the animal, who without them would probably run against objects which might injure it. Horses have these strong hairs both on the upper and lower lips, but they are probably designed for another use—that of keeping flies and insects from annoying them by getting into their nostrils while they are grazing. They are sufficiently close together for that purpose, and, moving

as they do, while the horse is feeding, serve to brush away anything offensive. Some animals are not furnished in this way, but then they are provided with something which protects them equally well from a similar annoyance. The elephant, for instance, has a sort of valve placed at the extremity of his proboscis, which he carefully closes when he is not using it, to prevent anything getting up his trunk which might injure him. His eyes are small: but, if they were in proportion to his size, he could not, with his peculiar formation, protect them so readily from injury in countries where insects are very formidable. He is, however, furnished with large pendent ears, which serve him as *flappers* in protecting his head from flies. Indeed, there are few, if any animals, which are not provided with sufficient means to guard themselves from injuries from those creatures who may annoy, but do not prey upon them. They have also some instinctive or actual properties, which enable them in some degree to secure themselves against the attacks of stronger animals, who, however, must have food, and generally obtain it only by great exertion or watchfulness. We see this in every gradation in the animal world, and it is a striking instance of that order in nature which serves to keep up a due proportion of each created thing, without suffering any one species to be exterminated. This would be the case if too much facility were afforded to predatory animals of securing the weaker ones whenever they pleased. A lion or a tiger has to wait long in ambush, and to exert much patience and watchfulness, before it can

find an opportunity of springing upon its prey. This is the case with the cat, fox, and some other animals, and occurs also amongst amphibia and even insects. What is wanting in swiftness is made up in cunning; so that, in some cases, even a semblance of death is put on for the purpose of securing food more readily.

I have entered into these remarks, because I have always considered the subject worthy of attention. How much would our actual enjoyment and comforts in this world be diminished if any one of the various species of quadrupeds, birds, or insects, which we see about us, were suffered to increase in too great a proportion! We can hardly form a calculation of the greatness of the evil either to ourselves or to the different created objects. At present, however, everything is most beautifully ordered and arranged, and no one species predominates too much over another. Those which are most useful to man multiply in a much greater proportion than others which are noxious. The latter, however, have their appointed use, and are made instruments in the hands of a superintending Deity for good. To a contemplative mind it is often a fearful consideration to reflect on the various modes of existence, and the different bodies wherein it has pleased God to cause life to dwell: many of which are subjected to great sufferings, and especially from one part of the creation preying upon another. What, however, many have brought forward as an argument of the want of mercy and justice in Almighty God, is, on the contrary, a proof of his goodness and benevolence.

The means which Nature takes to secure every race from becoming extinct, is to produce them in superabundance. The only way, therefore, of preventing them from overrunning the earth, is to produce enemies who shall prey upon and keep them within due limits. These different races, unless they were killed by their enemies, would increase beyond the supply of their food, so that the ordinary course of death amongst them would be the most painful one that can be imagined, namely, starvation. The real effect, therefore, of what may appear a disorder and cruelty in Nature, is, in point of fact, a mercy, as the individuals are taken off by a sudden death, in the height of their vigour, instead of being subject to the alternative of the lingering and protracted one which a want of food must have occasioned.

'How admirable, therefore, are the works of God! 'how excellent the operations of his hands!

'I considered plants and animals; four-footed 'beasts, and creeping things;

'In all was manifested infinite wisdom, and an 'excellent workmanship that I could not comprehend.

'Yet so much was made known unto me, as de-'clared the power and goodness of God; and the 'continued agency of the Great Creator, and Lord of 'of all things.

'Wherefore have we eyes to see? and hearts that 'we may know and understand?

'O Lord, make me to contemplate thy glorious 'works: and that which I know not, teach thou me!'

It has been justly remarked that there is nothing done by men worthy of commendation, but God has imprinted some imitation of it even in brutes and insects: we see this in various instances. Beavers are not only an example of great industry, but the manner in which they perform their operations in making their dams or embankments, according to existing circumstances, in a way which one would almost have thought mere instinct could not have taught them, proves them to be possessed of a faculty which might be considered as only belonging to man. If we want instances of fidelity, attachment, and sagacity, we have them in the dog; and all that we know of the elephant proves him to be capable of imitating some of the best faculties which are found in rational beings. His trunk serves him instead of a hand, and with that member, added to the great share of sense and docility with which he is endowed, he is capable of performing various actions, which man, in a state of ignorance and barbarism, would not have attempted. If we want to see beautiful architecture, we should watch the operations of the bee and other insects; and the weaver might take a lesson from the web of a spider. The persevering industry of the ant has been held up to us for imitation, not only by Solomon, but by the ancient poets.

'Magni formica laboris,
'Ore trahit quodcunque potest, atque addit acervo
'Quem struit, haud ignara ac non incauta futuri.'

Pope has beautifully expressed these thoughts in his Essay on Man,—

'Thus, then, to man the voice of Nature spake—
'Go, from the creatures thy instruction take:
'Learn from the birds what food the thickets yield;
'Learn from the beasts the physic of the field;
'Thy arts of building from the bee receive;
'Learn of the mole to plough, the worm to weave;
'Learn of the little nautilus to sail,
'Spread the thin oar, and catch the driving gale.'

'Each crawling insect holds a rank
'Important in the plan of him who framed
'This scale of beings.'

THOMPSON.

My bees are a constant source of amusement to me; and the more I study them, the more I am led to admire their wonderful instinct and sagacity. Few things, however, surprise me more than the power which they possess of communicating what I can only call 'intelligence' to each other. This I observe to be almost invariably the case before they swarm. Some scouts may then be observed to leave the hive, and for some time to hover round a particular bush or branch of a tree, after which they return to the hive. In a little while the new swarm quits it, and settles on the branch which had been previously fixed upon by the scouts. The same power of communication may be observed in the ant. I have often put a small green caterpillar near an ant's-nest; you may see it immediately seized by one of the ants, who after several ineffectual efforts to drag it to its nest, will quit it, go up to another ant, and they will appear to hold a conversation together by means of their antennæ, after which they will return together to the caterpillar, and, by their united efforts, drag it where they wish to deposit it.

I have also frequently observed two ants meeting

on their path across a gravel-walk, one going from, and the other returning to the nest. They will stop, touch each other's antennæ, and appear to hold a conversation; and I could almost fancy that one was communicating to the other the best place for foraging, which Dr. Franklin thought they have the power of doing, from the following circumstance. Upon discovering a number of ants regaling themselves with some treacle in one of his cupboards, he put them to the rout, and then suspended the pot of treacle by a string from the ceiling. He imagined that he had put the whole army to flight, but was surprised to see a single ant quit the pot, climb up the string, cross the ceiling, and regain its nest. In less than half an hour several of its companions sallied forth, traversed the ceiling, and reached the depository, which they constantly revisited until the treacle was consumed.

Huber says, 'that Nature has given to ants a 'language of communication by the contact of their 'antennæ; and that, with these organs, they are 'enabled to render mutual assistance in their labours 'and in their dangers; discover again their route 'when they have lost it, and make each other ac- 'quainted with their necessities. We see then,' he adds, 'that insects which live in society are in pos- 'session of a language; and in consequence of en- 'joying a language in common with us, although of 'an inferior degree, have they not greater importance 'in our eyes, and do they not embellish the very 'spectacle of the universe?'

What I have said respecting the power of communicating intelligence to each other, possessed by bees and ants, applies also to wasps. If a single wasp discovers a deposit of honey or other food, he will return to his nest and impart the good news to his companions, who will sally forth in great numbers to partake of the fare which has been discovered for them. It is, therefore, I think, sufficiently clear that these insects have what Huber calls an 'antennal language,'—a language, we can have no doubt, that is perfectly suited to them,—adding, we know not how much, to their happiness and enjoyments, and furnishing another proof that there is a God,—almighty, all-wise, and all-good,—who has 'ornamented the universe' with so many objects of delightful contemplation, that we may see him in all his works, and learn, not only to fear him for his power, but to love him for the care which he takes of us, and of all his created beings.

'They also know,
'And *reason*, not contemptibly.'
MILTON.

I BELIEVE that I consider with as much reverence as any one can do, and I hope that I am duly grateful for, the wonderful faculty which it has pleased our infinitely wise and good Creator to bestow upon his favourite creature man, for his guidance—I mean his inestimable gift to us of Reason. At the same time I must confess that I am very far from participating in that pride, which seems to have led some philosophers to suppose that they should infringe upon the dignity of our highly privileged species, by admitting any of the kinds which have been placed below us in the scale of creation, to a share in this endowment. On the contrary, my observations of nature have all tended to lead me to think, and I believe that, in general, those who devote much of their time and attention to studying the habits and manners of animals, will be disposed to the same opinion, that if our race has been pre-eminently distinguished by receiving the full light of reason, some sparks and glimmerings of the same Divine faculty have been vouchsafed by the same forming and almighty hand to our inferior fellow-creatures

It is no doubt exceedingly difficult, and perhaps impossible, to define where instinct ends, and reason

begins in animals. But that some of them are endowed with a faculty which does not come under the usual notion of instinct, by whatever other name we may choose to call it, will, I think, hardly allow of a dispute. This, as it strikes me, appears in the different degrees of intelligence which we are accustomed to recognize as elevating one species of animal above another,—as the *half-reasoning* elephant for instance, and the friend of man, the dog, above numberless others. Now, instinct of one tribe, one would think, as much as in another, must be full and perfect, and would not admit of our considering the degree of intelligence manifested in one species as higher or lower than that possessed by another. Again: much more must we conceive that the proper instinct of any species will be fully, and therefore equally, possessed by all individuals of that species. How, then, upon the notion of mere instinct, shall we account for that superiority of intelligence, which is found in one individual, to others of the same species, and which is familiar to those who are employed about, or in any way in the habit of *conversing* with, animals? But the observation which appears to me most decidedly to carry the faculties of animals to something exceeding the measure and character of instinct, is that of the new and ingenious contrivances to which they will often have recourse in situations, and upon occasions, much too accidental and peculiar to admit of our imagining that they could have been contemplated and provided against in the regular instinct of the whole species. This

we should naturally be disposed to conceive must have been given to regulate the ordinary habits of the animals, and adapted to those exigencies of their mode of life which are continually occurring, not to such as do rarely, and might, one would be tempted to say, never occur. A few instances will, perhaps, better explain what I mean, and carry more persuasion than my argument.

I was one day feeding the poor elephant (who was so barbarously put to death at Exeter 'Change) with potatoes, which he took out of my hand. One of them, a round one, fell on the floor, just out of the reach of his proboscis. He leaned against his wooden bar, put out his trunk, and could just touch the potato, but could not pick it up. After several ineffectual efforts, he at last *blew* the potato against the opposite wall with sufficient force to make it rebound, and he then, without difficulty, secured it. Now it is quite clear, I think, that instinct never taught the elephant to procure his food in this manner; and it must, therefore, have been reason, or some intellectual faculty, which enabled him to be so good a judge of cause and effect. Indeed, the *reflecting* power of some animals is quite extraordinary. I had a dog who was much attached to me, and who, in consequence of his having been tied up on a Sunday morning, to prevent his accompanying me to church, would conceal himself in good time on that day, and I was sure to find him either at the entrance of the church, or, if he could get in, under the place where I usually sat.

A gentleman, a good shot, lent a favourite old pointer to a friend who had not much to accuse himself of in the slaughter of partridges, however much he might have frightened them. After ineffectually firing at some birds which the old pointer had found for him, the dog turned away in apparent disgust, went home and never could be persuaded to accompany the same person afterwards.

I have been often much delighted with watching the manner in which some of the old bucks in Bushy Park contrive to get the berries from the fine thorn-trees there. They will raise themselves on their hind legs, give a spring, entangle their horns in the lower branches of the tree, give them one or two shakes, which make some of the berries fall, and they will then quietly pick them up.

A fly-cather (*muscicapa grisola*) had built its nest in a pear-tree against my garden-wall, and I had once or twice stopped and looked at the bird as she sat on her nest. Coming one morning, and looking for the nest, I could not find it for some time, but at last discovered it completely altered in appearance, the external parts of it being now in some degree assimilated to its situation. Some of the leaves of the pear-tree also seemed to have been drawn more over the nest, as if for the purpose of concealment.

These instances may serve to show that there is something more than mere instinct, which influences the conduct of some animals, and this is shewn by bees and ants.

A large brown slug made its way into a glass hive,

where the operation of the bees could be distinctly seen. Having killed the slug, and finding that they were unable to get it out of the hive, they covered it over with the thick resinous substance called propolis, and thus prevented its becoming a nuisance to the colony. Into the same hive one of the common brown-shelled snails also gained admittance. Instead of embedding it in propolis, the bees contented themselves with fixing it to the bottom of the hive by plastering the edge with that substance. I have now in my possession a regular fortification made of propolis, which one of my stocks of bees placed at the entrance of their hive, to enable them the better to protect themselves from the attacks of wasps. By means of this fortification, a few bees could effectually guard the entrance, by lessening the space of admission, which I had neglected to do for them.

Bees show great ingenuity in obviating the inconvenience they experience from the slipperiness of glass, and certainly beyond what we can conceive that mere instinct would enable them to do. I am in the habit of putting small glass globes on the top of my straw hives, for the purpose of having them filled with honey; and I have invariably found that before the bees commence the construction of combs, they place a great number of spots of wax at regular distances from each other, which serve as so many foot-stools, on the slippery glass, each bee resting on one of these with its middle pair of legs, while the fore-claws were hooked with the hind ones of the next above, thus forming a ladder, by means of which

the workers were enabled to reach the top, and begin to make their combs there. I was glad to find this circumstance recorded in Dr. Bevan's very agreeable work on the honey-bee, in which another very striking illustration of the reasoning powers of bees is mentioned. Dr. Bevan says that a friend of his, on inspecting his bee-boxes, perceived that a centre comb, burdened with honey, had separated from its attachments, and was leaning against another comb, so as to prevent the passage of the bees between them. This accident excited great activity in the colony, but of what nature could not be ascertained at the time. At the end of a week, the weather being cold and the bees clustered together, it was observed through the window of the box that they had constructed two horizontal pillars between the combs alluded to, and had removed so much of the honey and wax from the top of each, as to allow the passage of a bee: in about ten days more there was an uninterrupted thoroughfare; the detached comb at its upper part had been secured by a strong barrier, and fastened to the window with the spare wax. This being accomplished, the bees had removed the horizontal pillars first constructed, as being of no further use. Huber relates an anecdote something similar.

The power which bees possess of ventilating their hives and of producing such a temperature as will prevent the wax from melting in hot weather, is, I think, another proof that something more than mere instinct influences their conduct, as, in their natural state, bees are probably not in so confined a space as

they are in our common straw hives, or exposed so much to the heat of the sun. In hot weather, a number of bees (the number probably being regulated by the state of the atmosphere) may be observed busily employed at the bottom of the hive, moving their wings with so much rapidity, that the motion of them is almost imperceptible. If, while this action is going forward, a lighted candle should be held at an opening on the top of the hive, it will immediately be blown out, a fact which will enable you to form some idea of the current of air produced by these insects from the motion of their wings. I have, however, known instances in extreme hot weather, when all the labours of the bees to keep the hive in a proper temperature have failed, and a part of the wax has melted. In this case it is dangerous to go near the hive. The bees are in a state of extreme irritation, and though I fancy that mine know me and receive me as a friend, and allow me sometimes to take liberties with them with impunity, yet, at the time referred to, I have suffered from their stings in endeavouring to shelter them more effectually from the heat of the sun.

From the instances which have been given, you will now, perhaps, be inclined to agree with me, that some animals and insects are endowed with a faculty which approaches very near to reason. Dr. Darwin asserts, that if we were better acquainted with the histories of those insects which are formed into societies, as bees, ants, and wasps, we should find that their arts and improvements are not so similar and uniform as they now appear to us, but that they arose

in the same manner (from experience and tradition) as the arts of our own species; though their reasoning is from few ideas, busied about fewer objects, and is exerted with less energy. My theory does not, I confess, go quite the length of Dr. Darwin's, as, were this true, there is no knowing to what extent the reasoning powers of the insects referred to would carry them, nor would it be possible to explain why they should have remained in exactly the same state in which we have always known and at present find them. Still it serves to show his opinion, that some insects are possessed of a reasoning faculty; and in maintaining a doctrine which has been exposed to much cavil, it is a satisfaction to gain one additional name to the list of its supporters. Dr. Darwin gives an instance of reason in a wasp which he himself witnessed, and which is, I think, conclusive of the fact of these insects possessing something approaching very near to it. He informs us that walking one day in his garden, he perceived a wasp upon the gravel walk, with a large fly nearly as big as itself, which it had caught. Kneeling down, he distinctly saw it cut off the head and abdomen, and then, taking up with its feet the trunk, or middle portion of the body to which the wings remained attached, fly away. But a breeze of wind acting upon the wings of the fly, turned round the wasp with its burden, and impeded its progress. Upon this it alighted again on the gravel walk, deliberately sawed off first one wing and then the other, and having thus removed the cause of its embarrassment, flew off with its booty. If, as

has been asserted, there is no surer test of reason, than when, after having tried one mode of accomplishing a purpose, recourse is had to another more likely to succeed, surely some of the instances which have been given will sufficiently prove the reasoning powers of animals and insects; or, if not quite amounting to reason, it is clear, I think, that they are in possession of a superiority of intellect *, which approaches very near to it.

I have often watched a wasp taken in the web of a spider. The spider seems to be so perfectly aware that the wasp has the power of annoying him with its sting, that he carefully avoids coming in contact with it, but winds threads round and round it till the wasp can neither escape nor do any injury. When it is dead the spider feeds upon it.

There is a spider found in Jamaica, which makes its nest in the earth, of grass, moss, &c., and afterwards plasters it over with clay. The inside is lined with a silky membrane, smooth, and of a whitish grey,

* A strong proof of intellect was given in the case of Colonel O'Kelly's parrot. When the Colonel and his parrot were at Brighton, the bird was asked to sing; he answered 'I can't.' Another time he left off in the middle of a tune, and said 'I have forgot.' Colonel O'Kelly continued the tune for a few notes; the parrot took it up where the Colonel had left off. The parrot took up the bottom of a lady's petticoat, and said 'What a pretty foot!' The parrot seeing the family at breakfast said, 'Won't you give some breakfast to Poll?' The company teazed and mopped him a good deal; he said 'I don't like it.'—(From a Memorandum found amongst the late Earl of Guildford's Papers.)

with a valve of the same. When the spider wants to secure itself in the nest, it fastens this valve with its silky threads, so that a resistance is perceived when the fingers are applied to remove the valve. It is probable that the spider is in dread of some enemy which obliges it to have recourse to this ingenious contrivance for defending itself and preserving its young. In the Bermuda Islands there are spiders found which spin their webs between trees that stand eight or nine yards asunder. This they do by darting their threads in the air, and the wind carries them from one tree to the other. This web when finished, is sufficiently strong to entangle a bird. The fact of spiders throwing out a thread, in order to facilitate their approach to a neighbouring object, is now perfectly well known.

'From thee the feather'd natives of the plain,
'Or those who range the field, or plough the main,
'Receive with constant course th' appointed food
'And taste the cup of universal good.'

It has often afforded me much pleasure to observe the care which a kind Providence has taken for the better preservation of its creatures, while at the same time we are shown that there was no want of an Almighty power to create everything, if it was thought right to do so, with the most exquisite beauty. This is observable in many varieties of birds, the males of which are furnished with plumage of the most beautiful description, while the females are of a dull earthy colour. It is not difficult to assign a reason for this, and one which always gives me pleasure to reflect upon; for if so much care is taken by our Heavenly Father in the preservation of an insignificant bird, may we not, with the utmost confidence, look to the same source for protection, if we rightly and sincerely apply for it?

If hen birds, who sit and are exposed to the view of beasts and birds of prey, and of man, had the same gaudy colours as the male, they would presently be discovered and destroyed; whereas by having plumage of a dull brown, or earthy colour, they can scarcely be distinguished from the ground on which they sit, and thus escape observation and destruction.

This is particularly shown in the pheasant, peacock, and duck tribe. What can be more beautiful than the male bird of the golden pheasant, while the plumage of the female is so dull that it appears to belong to another species. Again, the males of the duck tribe are remarkable for their fine plumage, and the females for a brownish one; and the distinction between the peacock and peahen is still more conspicuous. The same observation applies to the chaffinch, yellow hammer, and many other birds that might be mentioned; while the plumage of the male and female of the falcon, swan, raven, owl, and other species of birds, who are able to defend themselves, is the same.

The same protecting care is shown in the order of plumage of birds who are much preyed upon, such for instance as the common partridge and lark, who are not easy to be distinguished from the earth on which they are sitting, or as Mr. White calls it ' cowering and squatting,' while a marauding hawk is hovering over them. The common house and wood pigeon would fall an easy prey to that bird if it were not for the amazing strength of their wing, which enables them to outfly and get away from it, while swallows, trusting to their wonderful agility, mob the hawk with impunity. Warblers, such as the nightingale, red-breast, fauvette, wren, &c. on the contrary, are pretty secure from its attacks, by sheltering themselves in thick hedges and bushes, and the quail and cornerake by seldom leaving the long grass and standing corn. One would almost

suppose that, in this beautiful economy for the preservation of the weaker birds, the hawk would be unable to procure its food; but when one examines the wonderful symmetry of its shape, the beauty and brilliancy of its eye, and the swiftness of its flight, it will no longer be a matter of surprise that some birds and animals should be unable to make their escape from it. The hawk *sails* over heaths and moors, and preys upon young hares and rabbits, as well as snipes and other small birds, and I believe frogs and lizards; and sometimes he hovers in the air for a considerable length of time till something has disturbed a bird, which he immediately pounces upon, and generally seizes.

In examining the formation and habits of the kangaroo, and the nature of the country in which it is found, we shall be forcibly struck with the truth of what has been remarked respecting the beneficent provisions observable throughout the animal kingdom for the preservation of the various creatures which compose it.

The kangaroo inhabits a country where there are enormous tufts of the coarsest grass growing in swamps or marshy ground, each tuft being several feet in height, and at a considerable distance from each other, or else they frequent rocky or bushy ground. By means of the great strength of their tail and hind feet they can even make bounds in succession of from twelve to twenty feet in length, and several feet in height, from one tuft of grass, or from one rock or bush, to another, and thus escape from

their pursuers. Nor is this all; for such is the strength and rankness of the grass in New Holland, or at least in some parts of it where the kangaroo most abounds, that if they produced their young in the manner usual with other quadrupeds, they would either wander and be lost in the high grass, or, in case the dam was obliged to leave them to provide for her own safety, it would not be easy for her to find her young again. By means, however, of an abdominal pouch, in which the young reside, and which they only occasionally leave either for exercise or amusement, they share the fate of the dam, who can make her escape, with her young in her pouch, in the manner already described.

I have, however, been assured that those kangaroos which have been domesticated and bred in this country are gradually losing the use of the pouch as a place of refuge for their young, that the size and strength of the tail is diminishing, and that they more frequently use all four of their feet in running. If this is really the case, I cannot but consider it as a strong illustration of what has been brought forward in this paper in regard to the care taken by a beneficent Providence of its creatures, in furnishing them with the means best adapted for their relative conditions and situations in the protection of themselves and their offspring, and diminishing those means when they become no longer of the same importance to them.

How soon would the breed of cuckoos be extinct if they made their nests and hatched their own

young as other birds do! The very peculiar cry of the cuckoo would instantly lead every marauding urchin to their nests, and we should be deprived of that note which every one listens to with pleasure in the country, and which forms one of the varieties of pleasing sounds which enliven our springs and summers. The instinct, also, which leads a cuckoo to deposit its egg in the nest of that bird whose young, when hatched, are sufficiently small to enable the young cuckoo to master them, and whose food is most congenial with its nature, is very surprising. Thus we find the young cuckoo in the nests of the water-wagtail and the hedge-sparrow, whose young he contrives to eject from the nest as soon as they are hatched, as it would be impossible for the old birds to supply nourishment for the cuckoo as well as for their own young ones, especially as the former, as he increases in size has a most voracious appetite. I had an opportunity of witnessing this in the case of a young cuckoo which was hatched in the nest of a water-wagtail, who had built in some ivy on a wall close to my house. It required the united efforts of both the old birds from morning to night to satisfy his hunger, and I never saw birds more indefatigable than they were. When the young cuckoo had nearly arrived at his full size, he appeared on the little nest of the water-wagtail, 'like a giant in a cock-boat.' Just before he could fly he was put into a cage, in which situation the old birds continued to feed him, till by some accident he made his escape, and remained in a high elm-tree near the house. Here the

water-wagtails were observed to feed him with the same assiduity for at least a fortnight afterwards. This cuckoo was very pugnacious, and would strike with its wings and open its mouth in great anger whenever I put my hand near him.

I am not aware that any naturalist has noticed the circumstance, that those birds who are necessarily obliged to be a longer time absent from their nests in search of food for themselves or for their young, make infinitely warmer nests than those who are able to procure their food more readily. Thus we see the duck, and many aquatic birds who have a voracious appetite, and have often to go over a considerable space of ground in search of food, and are consequently a long time absent from their nest, cover up their eggs with a prodigious quantity of down and feathers in order to prevent their eggs being chilled. In like manner the long-tailed titmouse (*Parus caudatus*), who having from twelve to fifteen young ones to provide for, must necessarily be a long time together away from them in search of food, so that she cannot herself impart the necessary warmth to her brood by sitting on them as most other birds do, not only lines her nest with a profusion of the softest feathers and down, but makes it almost in the shape of a ball, with a small hole in the side to enter at, so

that the young are effectually protected from cold in their snug abode*. The thrush, on the contrary, who can so readily procure worms on a lawn or in a meadow, so that it is not necessary for both the parent birds to be absent in search of food at the same time, lines its nest with clay or cow-dung.

The nest of the rook, also, which is in an exposed situation, has but little warmth of lining in it, but then the hen seldom leaves her nest, and is fed during the period of incubation by the cock. He also provides food for the young till the hen bird can leave them with safety to assist him in his labours.

I should not omit noticing the nest of the common house-sparrow, which is of a large size, and completely filled with feathers; and, though they have not so many young to provide food for as the long-tailed titmouse, they have a most voracious progeny, it having been calculated that a pair of sparrows, during the time they have their young to feed, destroy on an average 3360 caterpillars in a week, besides other insects. It is, therefore, I think evident that a more than usual degree of warmth is necessary to be provided in the nest of the sparrow, to enable the parent birds to leave their young with safety in search of such a prodigious quantity of food for them.

* I have mentioned, in another place, having found the nest of a long-tailed titmouse with a feather placed over the hole of the nest, evidently intended to exclude the cold winds which prevailed very much at the time I discovered it.

I have dwelt longer than I had intended on this latter part of the present subject, because it appeared new to me; and it has been well remarked that, 'amongst the many acts of gratitude we owe to God, 'it may be accounted one to study and contemplate 'the perfections and beauties of his works of creation; 'and that every new discovery must necessarily raise 'in us a fresh sense of the greatness, wisdom, and 'power of God.'

'The sable tenants of five hundred years,
'That on the high tops of yon aged elms
'Pour their hoarse music on the lonely ear.'—Anon.

It is impossible not to admire the manners and habits of rooks. Even Virgil seems to have been very fond of them, as he brings them into notice on every occasion. Indeed, in making remarks which appear so trifling that one is tempted to suppress them as unworthy of the attention of a naturalist, it is some pleasure to find that Virgil himself was not only a most attentive observer of Nature, but that he noticed circumstances in the habits of animals which might pass unheeded by most persons. Thus he mentions the well-known fact of birds* expanding and drying their wings in the sun,—of ants conveying their eggs from an exposed situation to the safe recesses of their nest,—

Sæpius et tectis penetralibus extulit ova
Angustum formica terens iter;—

of swallows gliding over the surface of a smooth lake; and of the noise rooks make on returning in the evening from feeding,—

Et è pastu decedens agmine magno
Corvorum increpuit densis exercitus alis.

* Dum virides inter saltus lucosque sonoros
Vere novo exultat, plumasque decora juventus
Explicat ad solem patriisque coloribus ardet;

It is impossible to witness this circumstance without pleasure, or the smooth but yet rapid manner in which they fly round the high trees on which they are going to roost, as if they thought it time to do so, and yet were unwilling to give up the enjoyment of a still, calm summer's evening, as long as they could see to sport and chase each other in the air: sometimes ascending to a considerable height, and at others descending with amazing rapidity, varying their flight in a manner equally amusing and unexpected.

'But cawing rooks, and kites that swim sublime,
'In still repeated rounds,—have charms for me.

Country people suppose that when rooks return from pasture making a more than usual noise with their wings, and with a quick flight, it is a sign of rain; and that, if part of them stay at the rookery, and sport about the trees, making their cawing note in a softer tone than usual, three or four time successively, it is a sign of fine weather.

Rooks appear to have a language amongst themselves, which is understood by the whole community; and a peculiar note from a bird set to watch and to warn them of approaching danger, is quite sufficient to make them take flight, and always in an opposite direction to that from which the danger is apprehended.

'Their danger well the wary plunderers know,
'And place a watch on some conspicuous bough.'

As the rook is a favourite, I am always sorry to see

it during a hard frost. Instead of being that active, happy bird which he appears to be in summer, strutting over a meadow, and either flirting with his mate, or feeding one of his young ones who has had strength enough to follow him, and who receives the food with fluttering wings and tremulous note, he is now, on the contrary, a moping melancholy bird, appearing to avoid his old companions, and to be without sufficient energy even to seek for food, often remaining in one position for a considerable length of time.

There is one trait in the character of the rook which is, I believe, peculiar to that bird, and which does him no little credit,—it is the distress which is exhibited when one of them has been killed or wounded by a gun while they have been feeding in a field or flying over it. Instead of being scared away by the report of the gun, leaving their wounded or dead companion to his fate, they show the greatest anxiety and sympathy for him, uttering cries of distress, and plainly proving that they wish to render him assistance, by hovering over him, or sometimes making a dart from the air close up to him, apparently to try and find out the reason why he did not follow them,—

> ' While circling round and round,
> ' They call their lifeless comrade from the ground.'

If he is wounded, and can flutter along the ground, the rooks appear to animate him to make fresh exertions by incessant cries, flying a little distance before

him, and calling to him to follow them. I have seen one of my labourers pick up a rook so wounded, which he had shot at for the purpose of putting him up as a scare-crow in a field of wheat, and while the poor wounded bird was still fluttering in his hand, I have observed one of his companions make a wheel round in the air, and suddenly dart past him so as almost to touch him, perhaps with a last hope that he might still afford assistance to his unfortunate mate or companion. Even when the dead bird has been hung, *in terrorem*, to a stake in the field, he has been visited by some of his former friends, but, as soon as they found that the case was hopeless, they have generally abandoned that field altogether.

When one considers the instinctive care with which rooks avoid any one carrying a gun, and which is so evident, that I have often heard country people remark that they can smell gunpowder, one can more justly estimate the force of their love or friendship in thus continuing to hover round a person, who has just destroyed one of their companions with an instrument, the dangerous nature of which they seem fully capable of appreciating.

That it is the instrument, and not the man, which they avoid, is evident from their following the heels of the peaceable ploughman along the furrow, sometimes taking short flights after him, and each rook showing some degree of eagerness to be nearest the ploughman, and to have the best chance of being the first to pick up the newly turned up worm, or the grub of the cockchafer, of which they are very fond.

Rooks are not easily induced to forsake the trees on which they have been bred, and which they frequently revisit after the breeding season is over. This is shown in Hampton Court Park, where there is an extensive rookery amongst the fine lime-trees, and where a barbarous and unnecessary custom prevails of shooting the young rooks. As many as a hundred dozen of them have been killed in one season, and yet the rooks build in the avenue, though there is a corresponding avenue close by, in Bushy Park, which they never frequent, notwithstanding the trees are equally high and equally secure. I never hear the guns go off during this annual slaughter without execrating the practice, and pitying the poor rooks, whose melancholy cries may be heard to a great distance, and some of whom may be seen, exhausted by their fruitless exertions, sitting melancholy on a solitary tree waiting till the *sport* is over, that they may return and see whether any of the offspring which they have reared with so much care and anxiety are left to them; or, what is more probable, the call for assistance of their young having ceased, they are aware of their fate, and are sitting in mournful contemplation of their loss. This may appear romantic, but it is nevertheless true: and whoever, like myself, has observed the habits and manners of the rook, and witnessed their attachment to each other and to their young,—and is convinced, as I am, that they have the power of communication by means of a language known to themselves, and are endowed with a knowledge and foresight most ex-

traordinary, will take as much interest in them as I have confessed that I do.

Some farmers have a very mistaken notion that rooks are injurious to them. They certainly now and then feed on grain, but the damage they may do in this respect is much more than counterbalanced by the good they do in destroying the grubs of the cockchafer and beetles, and other insects which are injurious to the farmer.

Rooks are known to bury acorns, and I believe walnuts also, as I have observed them taking ripe walnuts from a tree and returning to it before they could have had time to break them and eat the contents. Indeed, when we consider how hard the shell of a walnut is, it is not easy to guess how the rook contrives to break them. May they not, by first burying them, soften the shells, and afterwards return to feed upon them?

The Reverend W. Bingley, an amiable naturalist, has observed, 'that as soon as rooks have finished 'their nests, and before they lay, the cocks begin to 'feed the hens, who receive their bounty with a 'fondling, tremulous voice and fluttering wings, and 'all the little blandishments that are expressed by 'the young while in a helpless state, and that this 'gallant deportment of the male is continued through 'the whole season of incubation.'

I must, however, add that my friends the rooks are somewhat given to thieving, and I am afraid that if both the birds left the nest at the same time, some of the other members of the community would soon

deprive them of those sticks which they had collected with so much trouble. One of the birds is, therefore, always left to protect their property.

Rooks feed on various kinds of food, as well as worms. They are sad depredators on my cherry trees, attacking them early in the morning, and carrying off great quantities. They will also eat potatoes and pears, taking them away in their beaks. The grub of the cockchafer, however, seems to be their favourite food, and their search for it, especially in old mossy grass fields, may be seen by the little tufts of moss which are pulled up by them and scattered about. Their power of discovering this caterpillar by the scent is very extraordinary. A gentleman once shewed me a field which had all the appearance of having been scorched, as if by a burning sun in dry hot weather. The turf peeled from the ground as if it had been cut with a turfing spade, and we then discovered that the roots of the grass had been eaten away by the larvæ of the cockchafer, which were found in countless numbers at various depths in the soil. This field was visited by a great quanity of rooks, though there was no rookery within many miles of the neighbourhood, who turned up and appeared to devour the grubs with great satisfaction.

Rooks are fond of company, the jackdaw and even the starling being allowed to associate with them, and a mutual good understanding seems to exist amongst them. Even the sparrow is sometimes allowed to build its nest under the protection of that of a rook.

Wilson, in his American Ornithology, says that crows have been employed to catch crows by the following stratagem:—A live crow is pinned by the wings down to the ground on his back, by means of two sharp forked sticks. Thus situated, his cries are loud and incessant, particularly if any other crows are within view. These sweeping down about him, are instantly grappled and held fast by the prostrate prisoner, with the same instinctive impulse that urges a drowning person to grasp at every thing within his reach. The game being disengaged from his clutches, the trap is again ready for another experiment; and by pinning down each captive successively, as soon as taken, in a short time you will probably have a large flock screaming above you, in concert with the outrageous prisoners below.*

The same author mentions an agreeable instance of attachment in a crow. 'A gentleman, who re-'sided on the Delaware, a few miles below Easton, 'had raised (reared) a crow, with whose tricks and 'society he used frequently to amuse himself. This 'crow lived long in the family, but at length disap-'peared, having, as was then supposed, been shot by 'some vagrant gunner, or destroyed by accident. 'About eleven months after this, as the gentleman, 'one morning, in company with several others, was 'standing on the river shore, a number of crows hap-'pening to pass by, one of them left the flock, and

* This method of catching crows is, I believe, practised in some parts of England to catch jays, who make a most violent outcry when pinned to the ground.

'flying directly towards the company, alighted on the 'gentleman's shoulder, and began to gabble away 'with great volubility, as one long absent friend natu-'rally enough does on meeting with another. On re-'covering from his surprise, the gentleman, instantly 'recognised his old acquaintance, and endeavoured, 'by several civil, but sly manœuvres, to lay hold of 'him: but the crow, not altogether relishing quite so 'much familiarity, having now had a taste of the 'sweets of liberty, cautiously eluded all his attempts; 'and suddenly glancing his eye on his distant com-'panions, mounted in the air after them, soon over-'took and mingled with them, and was never after-'wards seen to return.'

The rook seems to be even more unpopular in America than he is in this country. Mr. Wilson says, that he is there branded as a thief and a plunderer; a kind of black-coated vagabond, who hovers over the fields of the industrious, fattening on their labours, and, by his voracity, often blasting their expectations. Hated as he is by the farmer, watched and persecuted by almost every bearer of a gun, who all triumph in his destruction, had not heaven bestowed on him intelligence and sagacity, far beyond what is common in other birds, there is reason to believe that the whole tribe would long ago have ceased to exist.

The average number of rooks' nests, during the last four years, in the avenue of Hampton Court Park, has been about 750. Allowing three young birds and a pair of old ones to each nest, the number would amount to 3750. They are very particular that none

of their society build away from the usual line of trees. A pair of rooks did so this spring, and when their nest was nearly finished, at least fifty others came and demolished it in a few minutes, Rooks may be seen teaching their young to fly as soon as they leave the nest, advancing a little way before, and calling upon them to follow. These short flights are incessantly repeated, till the young ones have acquired sufficient strength and skill to follow the old birds.

Rooks sometimes choose odd places to build in, and where we should have hardly expected to find the nest of a bird of such social habits. Dr. Mitchell says that a few years ago a pair of rooks built their nest between the wings of the dragon of Bow Church in London. They remained there till the steeple required repairs. He adds, that the same or another pair have this spring built their nest on the top of a large plane tree in Wood-street, close to Cheapside. Last season a hawk built its nest under the dome of St. Paul's, and a similar occurrence took place about forty years ago. Another of the falcon tribe had its nest, a few years ago, in the top of the steeple of Spitalfields Church.

Colonel Montague mentions an instance of great sagacity in crows. He observed two of them by the sea-shore, busy in removing small fish beyond the flux of the flowing tide, and depositing them just above high-water mark, under the broken rocks, after having satisfied the calls of hunger.

Mr. Hone in his 'Every Day Book,' has introduced an agreeable anecdote respecting a rookery on some

high trees behind the Ecclesiastical Court, in Doctor's Commons. 'Some years ago there were several 'large elm trees in the college garden behind the 'Ecclesiastical Court, in Doctor's Commons, in which 'a number of rooks had taken up their abode, forming, in appearance, a sort of *convocation* of aërial ecclesiastics. A young gentleman, who lodged in an 'attic, and was their close neighbour, frequently entertained himself with thinning this covey of black 'game, by means of a cross-bow. On the opposite 'side lived a curious old civilian, who observing from 'his study that the rooks often dropped senseless 'from their perch, or, as it may be said, without using 'a figure, *hopp'd the twig* making no sign, nor any 'sign being made to his vision to account for the 'phenomenon, set his wits to work to discover the 'cause. It was probably during a profitless time of 'peace, and the doctor having plenty of leisure, 'weighed the matter over and over, till he was at 'length fully satisfied that he had made a great ornithological discovery, that its promulgation would 'give wings to his fame, and that he was fated by 'means of these rooks to say—

'Volito vivus per ora virum.

'His goose-quill and foolscap were quickly in requisition, and he actually wrote a treatise, stating circumstantially what he himself had seen, and in conclusion, giving it as the settled conviction of his mind, 'that rooks were subject to the *falling sickness!*'

'Nature to all, without profusion kind,
'The proper organs, proper powers assign'd,
'All in exact proportion to the state;
'Nothing to add, and nothing to abate.'

POPE.

The observations which I made in another place, that every animal would be found to be possessed of those properties which are best adapted for its preservation, or to enable it to procure its food, is illustrated in a remarkable manner in the formation of the bill of the cross-beak *(Loxia curvirostra)*. Dr. Townson * has observed, that the bills of some of the feathered tribes are so irregular in their form, and so preposterous in their size, that one would almost think that Nature had not shown her usual kindness towards them, but had, in derision, instead of giving them a useful instrument of nutrition and defence, loaded them with an awkward and unseemly protuberance. Yet those who have attentively considered the structure of the different parts of animals, and their offices in the economy of Nature, though they may have been often struck with some apparent irregularity or defect, yet will have found, upon attentive observation, that they were well adapted to their destinations.

The bill of the cross-beak, Dr. Townson observes, is unique, for it is the only one in which the two man-

* See his Observations in Natural History.

dibules, instead of lying straight, the one upon the other, like the fangs of a pair of pincers, pass for a considerable part of their length on the side of each other, like the blades of a pair of scissors; the upper mandibule towards the point being inclined to one side, and the inferior inclined to the other.

This singular structure indicates a peculiar destination, but it is not that of cutting off twigs, as some have supposed, but of procuring their food in the following manner. The great pine forests in Germany are the natural places of residence of the cross-beaks, and the seeds of the cones of these trees their food, and it is to pull out the seeds from between the scales of the cones, that this structure is given them. Their mode of operation is thus:—they first fix themselves across the cone, then bring the points of the mandibules from their crossed or lateral position, to be immediately over each other. In this reduced compass, they insinuate the beak between the scales, and then opening it, not in the usual manner, but by drawing the superior mandibule sideways, force open the scales. They now again bring the points of the mandibules over each other, and pick out the seed in the same manner as if the bill had the usual form.

The goldfinch, on the contrary, is furnished with a beak with an extremely fine and sharp point, which enables it to penetrate the heads of thistles and other plants, and get at their seeds. What can be better adapted than the bills of the woodcock and snipe for penetrating moss, soft earth, &c., in search of food; and the hook of the upper mandibule of the eagle

and hawk tribe for tearing and separating their food, and their strong claws for holding it while they do so? The bills of those birds which search for their food in mud, or feed on flies and other insects, are every way suitable to their mode of life. This is very remarkable in the duck species. Blumenbach observes that they appear to possess a real sense of taste: in them the organ is the soft covering of the bill, which is supplied with exceedingly large cutaneous nerves, and is very sensible in the living animal. We remark the manner in which ducks *probe*, as it were, the puddles in search of their food, where they cannot be guided by the sight or smell.

Thrushes feed very much on snails, looking for them in mossy banks. Having frequently observed some broken snail-shells near two projecting pebbles on a gravel walk, which had a hollow between them, I endeavoured to discover the occasion of their being brought to that situation. At last I saw a thrush fly to the spot with a snail-shell in his mouth, which he placed between the two stones, and hammered at it with his beak till he had broken it, and was then able to feed on its contents. The bird must have discovered that he could not apply his beak with sufficient force to break the shell while it was rolling about, and he therefore found out and made use of a spot which would keep the shell in one position. I do not know whether Mr. M'Adam has ever observed the same circumstance, but his ingenious contrivance (if it is his) of confining stones in a sort of hoop while

they are being broken, is somewhat similar to that of the thrush.

When the lapwing wants to procure food, it seeks for a worm's cast, and stamps the ground by the side of it with its feet: somewhat in the same manner I have often done when a boy, in order to procure worms for fishing. After doing this for a short time, the bird waits for the issue of the worm from its hole, who, alarmed at the shaking of the ground, endeavours to make its escape, when he is immediately seized, and becomes the prey of this ingenious bird. The lapwing also frequents the haunts of moles. These animals, when in pursuit of worms on which they feed, frighten them, and the worm, in attempting to escape, comes to the surface of the ground, where it is seized by the lapwing. The same mode of alarming his prey has been related of the gull.

'And you may take notice, that as the *carp* is accounted the 'water-fox for his cunning, so the *roach* is accounted the water-'sheep for his simplicity or foolishness.'

IZAAK WALTON.

VERY little is known of the habits and economy of fish from the nature of the element in which they live. When I resided in Bushey Park,* I caused the sides and bottom of a place to be bricked, through which a stream of very clear water ran, and stocked it with most of the varieties of our English fresh-water fish, supplying them abundantly with food; but though I constantly watched them, and could see all they did at any time of the day, the result of my observations was far from being satisfactory. The perch were the boldest and most familiar of any of the fish, as I found no difficulty in soon getting them to come with eagerness to take a worm out of my hand. The barbel were the shyest, and seemed most impatient of observation, although in the spring, when they could not perceive any one watching them, they would roll about and rub themselves against the brick work, and show considerable playfulness. There were some large stones in my *piscatorium*, round which they would wind their spawn in considerable quantities. The trout appeared to bear their confinement with less philosophy than any of the others, making high leaps against the grating which admitted the water,

and seeming at all times out of sorts and out of condition. The chub were also very restless, being continually on the move, but they never could resist a cockchafer when thrown to them. My flounders only moved at night, and the eels always made their escape, but in what way I never could conjecture, except indeed they had the power of crawling up the brick work, which was about five feet from top to bottom, and generally two feet above the edge of the water. They certainly could not get through the grating, which was sufficiently close to confine bleak and gudgeons; and some of the eels were of a large size. The carp and tench were soon reconciled to their situation, and eat boiled potatoes in considerable quantities, and the former seemed to have lost their original shyness, eating in my presence without any scruple. The pike, of which I had eight of about five pounds' weight each, kept up their character for voracity. Out of 800 gudgeons, which were brought to me by a Thames fisherman, and which I saw counted into the reservoir, some few of which however died, there were scarcely any to be seen at the end of three weeks, though I should mention that the three large barbel I had, and six good-sized perch, probably partook of them. Indeed the appetite of one of my pike was almost insatiable. One morning I threw to him, one after the other five roach, each about four inches in length. He swallowed four of them, and kept the fifth in his mouth for about a quarter of an hour, when it also disappeared.

But, of all my fish, the bleak* were the most amusing and playful. Their activity could not be exceeded; and it gave me much pleasure to see them, on a still summer's evening, dart at every little fly that settled on the water near them, appearing always restless, and yet always happy.

That fish have the power of hearing there can, I think, be no doubt, as I have seen them suddenly move at the report of a gun, though it was impossible for them to see the flash. They also appear to have the sense of smelling, as they will prefer paste and worms that have been prepared by particular perfumes. They have also some curiosity, which I have witnessed by putting some new object into the water, which they have assembled around, and appeared to reconnoitre: carp, especially, would come up to a new fish which was put amongst them.

Roach, and other small fish, are perfectly aware of, and are careful to avoid, those fish which prey upon them. Thus, I have seen large carp swim amongst a shoal of roach without in the least disturbing them, while, if a pike comes near them, they make off in every direction.

Fish, appear also, to be capable of entertaining affection for each other. I once caught a female pike during the spawning season, and nothing could drive the male away from the spot at which the female

* It may be asked how it happened that these bleak were not devoured by the pike? Many of them were so, no doubt, but there were always a sufficient number left to enable me to observe their habits.

disappeared, whom he had followed to the very edge of the water. A person who had kept two small fish together in a glass, gave one of them away; the other refused to eat, and showed evident symptoms of unhappiness till his companion was restored to him.

The boldness of a pike is very extraordinary. I have seen one follow a bait within a foot of the spot where I have been standing; and the head-keeper of Richmond Park assured me that he was once washing his hand at the side of a boat in the great pond in that Park, when a pike made a dart at it, and he had but just time to withdraw it. A gentleman now residing at Weybridge, in Surrey, informed me that, walking one day by the side of the River Wey, near that town, he saw a large pike in a shallow creek. He immediately pulled off his coat, tucked up his shirt sleeves, and went into the water to intercept the return of the fish to the river, and to endeavour to throw it upon the bank by getting his hands under it. During this attempt, the pike, finding he could not make his escape, seized one of the arms of the gentleman, and lacerated it so much that the wound is still very visible. *

The digestion of the pike is so rapid, that in a few hours, not a single bone of a roach which it has swallowed can be discovered. This may account for the

* A friend of mine caught a pike a few minutes after breaking his tackle, and found it in the pike, a part of the gimp hanging out of his mouth. He also caught another, in high condition, with a piece of strong twisted wire projecting from its side. On opening it a double eel-hook was found at the end

fact of a pike who has gorged himself to the full, holding a small fish in his mouth whilst the digestion of his previously taken prey has been going on, and swallowing it as soon as that process had been effected.

Mr. Fraser in his 'History of the Salmon,' mentions the same fact with regard to that fish, and says that he has found seven small fish in a grilse of three pounds and a half, and several, particularly herrings, in the body of salmon, and that the digestion was so rapid, that fire or water could not consume them quicker. He remarks, that the Salmon, like the woodcock, has but one intestinal canal; this, he says, is tripled in the middle, and covered with a coat of fat, which, in a short time, dissolves everything eaten by the fish.

The Rev. John Buchanan, also, in his account of St. Kilda, gives a still stronger instance of the rapidity of digestion. He says that the Solan goose can carry five herrings at a time to his mate or young, which he ejects from his gorget into the nest. And, he adds, that this fowl digests so quickly, that instances have been known in which the bird being shot immediately as he appeared above the surface of the sea (after having darted at some fish from on high), the fish was found partly digested in his stomach.

of the wire, much corroded. This may account for so few pike being found dead after they have broken away with a gorge-hook in them. An account will be found, in 'Salmonia,' of a pike taking a bait, with a set of hooks, in his mouth, which he had just before broken from a line.

Sir Humphrey Davy, in his 'Salmonia,' speaking of the stronger upper jaw and larger projection of bone below the orbit of the eye, in pike and other fishes of prey, supposes that the use of it is to strengthen the fulcrum of the lever on which the lower jaw moves, so as to afford the means of greater strength to the whole muscular apparatus, by means of which the fish seizes its prey. May not, however, the projection of bone below the orbit of the eye be also intended to protect that organ from injury during the violent darts the pike is often obliged to make in order to seize his prey amongst stones, roots of trees, &c. ?

The rapid growth of some fish is very extraordinary. I saw three pike taken out of a pond in Staffordshire belonging to the present Sir Jervoise Clark Jervoise, two of which weighed thirty-six pounds each, and the other thirty-five pounds. The pond was fished every seven years, and, supposing that store pike of six or seven pounds weight were left in it, the growth of the pike in question must have been at the rate of at least four pounds-a-year.

Salmon, however, grow much faster. It is now ascertained that grilse, or young salmon, of from two and a half to three pounds weight have been sent to the London markets in the month of May, the spawn from which they came having only been deposited in the preceding October or November, and the ova taking three months of the time to quicken, It has also been ascertained by experiment, that a grilse which weighed six pounds in Feb-

ruary, after spawning, has, on its return from the sea in September, weighed thirteen pounds: and a salmon-fry of April will in June weigh four pounds and in August six. *

Fish are very partial to certain places. A gentleman, well known as an old Thames fisherman, has for several years past been in the habit of marking certain fish which he has caught, taking them several miles up the river in the well of his boat, and then turning them loose. He frequently catches them a second, and a third time in the same place were they were originally taken. I have known a pike haunt the same spot under a tree during a whole summer, and salmon are supposed to return in all cases to the river where they were bred.

Mr. Fraser, who has been already quoted, says that, in establishing this curious point in natural history, little reliance can be placed on the alleged variety of appearance in salmon found in different rivers. The best authority is some mark actually made on the body of the fish, which proves also its extraordinary rapidity of growth. In February, 1829, Mr. Fraser marked several grilse after spawning by cutting off the fin above the tail. On the 1st of September following he caught one of them, which then weighed thirteen pounds. On the 10th of the same month he caught another weighing fourteen pounds: both were very fine salmon, and charged with spawn. None of these, he says, could weigh above five or six

* See Mr. Alexander Fraser, on the 'Natural History of the Salmon.'

pounds at the time he marked them. They were taken very near the ground where they were marked.

The same experiment, Mr. Fraser adds, has been often made with success. Mr. Mackensie, of Ardross, tied wire round the tails of some breeders returning to the sea in March, 1824, and about the same time in the next year, in March, 1825, he caught one of the fish thus marked, doubled in size, and the wire nearly out of sight.

In the river Ewe, in Ross-shire, also, some years since, Mr. Mackensie, tacksman of the river, marked a number of grilse by cutting off a small part of the tail, or of the short thick fin above it, and afterwards let them go. Towards the end of the same fishing season some of these fish, marked as above, returned to their river and were caught. They were then large salmon, and double the size and weight which they were two or three months before.

In the river Berridale, in Caithness, Mr. Alexander Morrison, in the year 1794, in the month of May, marked five smelts, or salmon-fry, in such a manner that, if ever any of them returned to the river and were caught, no doubt could remain as to their being of the number so marked. Two of these smelts, then become grilses, he caught in six or seven weeks after they had been marked, when they weighed about three pounds and a half each. In April following he caught another of the number, then a salmon, which weighed between seven and eight pounds; and in the month of August he caught a fourth, weighing eight pounds.

In the rivers Eden, Spey, &c., fry have been marked by boring holes through the tail, and the fish have been found, returned from the sea to the same streams, in about three months afterwards, weighing three pounds each. The fact, therefore, of salmon returning to their native rivers after their migration to the sea, seems to be established beyond a doubt.

Mr. Fraser also observes that the attachment of a salmon to its native streams, like that of young pigeons to their first dove-cot, is well known, and the struggles he will undergo, from wiers, and waterfalls, to reach it on returning from the sea, are circumstances equally remarkable. It is possible, he suggests, that he may be guided by the particular smell of the river. He does not think they go far from land, nor beyond the deep dells or valleys that are known to be on each side of the spawning ground resorted to by herrings, and where there are at all times numbers of small fish for the food of the salmon. Salmon, he thinks, do not migrate to such distances from their rivers as horses, sheep, and dogs have been known to find their way home.

Should this supposition be correct, the return of salmon to their native rivers would be a matter of but little difficulty. I am, indeed, much disposed to believe so from what I have observed of the attachment of fish to certain spots. If they were of a restless disposition, and given to seek new places, their destruction, from many causes, would be much more certain than if they confine themselves, as I believe they do, to particular situations.

What has so often been said of herrings, mackerel, and other gregarious fish moving in vast shoals from Shetland to the Orkneys, and of their then dividing and surrounding the islands of Great Britain and Ireland, is, I think, liable to some objections.

During the last month (April) large shoals of mackerel came on the shallows, a few miles from Brighton, one day, and disappeared the next. This is constantly observed to be the case not only there but in other places, and may perhaps be accounted for in this way. We must consider that there are, probably, as many mountains, and valleys, and plains in the sea as we know there are on land. We are to recollect that those mountains and valleys are covered with weeds of various kinds, which afford food and shelter to an infinite number of fish and marine animals and insects; and we know that all fish come into shallow water for the purpose of depositing their ova, which the influence of the air, not, as has been commonly supposed, of the sun, is required for bringing to maturity. Is it not probable, then, that the shoals of fish which are found on our fishing banks, have left some neighbouring deep, where they had retired for the winter, till they are rendered buoyant by the quantity of roe within them, and are directed by instinct to go and deposit it in the adjacent shallows? If, as is generally supposed, all fish, both great and small, from the whale to the herring, have each their respective haunts and localities, why should we suppose that they quit those haunts to go many hundred miles in search of spawn-

ing ground, when that ground is to be found near their winter retreats? It appears more probable that the large shoals of fish which are found are quite unconnected with each other, and that they have all just quitted some neighbouring deep for the nearest shallow, only moving on as the ground is occupied, or till they have paired and the roe is ready to be deposited. This opinion is entertained by many old fishermen, and the circumstance of shoals of fish appearing and disappearing in the course of a day seems to confirm it. Another fact will strengthen this conjecture. An unusually large sort of herring is caught off the coast of Cardigan, and a much smaller one in the contiguous bay of Swansea. If the shoals of herrings which have been supposed, after quitting the neighbourhood of Shetland in June, to proceed to the Orkneys, and then to divide and surround the island of Great Britain and Ireland, and unite off the Land's-end in September, are really those which are taken off our coasts, why should the fish that are found in the bays of Cardigan and Swansea vary so much in size?

It may be objected that the smaller shoals of mackerel and herrings which are found before the larger shoals appear, have but little roe in them, and that, consequently, they do not come in the shallows to deposit it. This very circumstance, I think, strengthens my argument, as it shows the probability of their having had a retreat in the adjoining deeps, from which they most likely have been driven by porpoises and other fish of prey, who feed on them, and

to which they return in a short time, till they are more fully charged with spawn.

I am aware that, in stating these suppositions, I am departing from the opinions expressed by persons who have had better opportunities than myself of ascertaining facts respecting the migration of gregarious fish. My speculations on the subject may, however, lead to further inquiry, and will not, I trust, be found wholly without interest.

At the same time I would not be understood as denying the partial migrations of fish. They certainly do take place, but perhaps not to so great an extent as is generally supposed. These partial migrations may be accounted for by a want of food—by reason of the spawning ground being too much occupied—by fright from the various enemies which surround them—by their ova not having arrived at maturity, and by the now pretty well ascertained fact of the proportion of males to females being about two to three, which might, perhaps, induce the latter to migrate in search of the males. That hard roed fish are more numerous than soft is generally acknowledged. The circumstance, also, of the young fry of the herring and mackerel being taken by fishermen on various parts of our coasts, seems, in some degree, to confirm my conjecture, as does the facts of some few of those fish being found at all seasons of the year.

Again: if these migrations take place *from* the North Seas, large shoals of *young* fish must migrate *to* them, and yet I do not find that such shoals have

been seen in sufficient numbers to justify the supposition of their having left the various spawning grounds for the purpose of congregating near Shetland, in readiness for the southward migrations of the following year.

Having stated this speculation of my own (for it is nothing more) respecting the migration of fish, I will mention a curious instance of the disappearance of haddocks from the coasts of Northumberland, Durham, and Yorkshire, in the years 1790, 1791, and 1792. This circumstance is mentioned in a letter to the Secretary of the Royal Society, and seems to have excited the attention of the late Sir Joseph Banks.

It appears that, as far back as the memory of the oldest man reached, prodigious quantities of haddocks were caught on the above-mentioned coasts for about three months in the year. In the years in question this supply nearly ceased, and the few that were caught were remarkably large. Various causes were conjectured for this deficiency, one of which was that the shoal of haddocks had met with beds of copperas at the bottom of the sea; and another, that the usual gales of wind had not taken place which were necessary to drive the fish off the Dogger Bank.

The captains of some vessels belonging to North Shields and Sunderland affirmed that, after doubling the North Cape and near Fisher's Island, they fell in with immense quantities of haddocks lying on the surface of the ocean. Most of these fish were dead, and

some in a weak and feeble state, and unable to sink in the water. They found them for the space of between twenty and thirty leagues in length, and from three to five leagues in breadth. Some of them were eaten without any person receiving the least injury from them. They were stated to be lying so thick together, that, in the compass of twelve or fifteen yards, a boat load of three to five tons might have been taken up. On opening some of them the *sound* was found to be much inflated, to which cause the great mortality amongst these fish was ascribed, but what occasioned this inflation does not appear.

In the former part of this paper I mentioned the few observations I had been able to make on some fish I kept in a clear stream which ran through my garden. I will now give an account published by Mr. Neill, in the 'Scots' Magazine,' of some sea-fish kept in a small pond into which sea-water could be introduced. This pond was from time to time replenished with fish. The following fishes were in it:—

'1. *Cod.*—They were lively, and caught greedily at 'shell-fish, which were thrown into the pond. They 'kept chiefly, however, in the deep water, and, after 'approaching with a circular sweep, and making a 'snatch at the prey, descended out of sight to devour it.

'2. *Haddock.*—These, contrary to expectations, 'were found to be the tamest fishes in the pond. At 'ebb tide they came to the inner margin, and ate 'limpets from the hand of a little boy, the son of a 'keeper. They appeared white, and rather sickly.

'3. *Coalfish.*—Some of these were of a large size,

'exceeding in dimensions the largest cod in the pond. 'They were bold and familiar, floating about slowly 'and majestically, till some food was thrown to them; 'this they seized voraciously, whether it consisted of 'shellfish or ship biscuit. They also would occasion-'ally approach the margin, and take their food from 'the keeper's hand.

'4 *Whiting*.—These were scarce in the pond, and 'very shy.

'5. *Pollack*.—This was pretty common, and has 'been found to answer well as a pond fish.

'6. *Salmon*.—This was the wildest and quickest in 'its motions of all the inhabitants. When a muscle 'or limpet, freed from the shell, was thrown on the 'surface of the water, the salmon very often darted 'forward and took the prey from all competitors, dis-'appearing with a sudden jerk and turn of the body.

'7. Flat fish or flounders, of two sorts, were also 'in the pond, but they naturally kept at the bottom, 'and were not seen.

'The food given to the fishes consisted chiefly of 'sand-eels and of shell-fish, particularly limpets and 'muscles. In the herring-fishery season, herrings 'were cut in pieces for this purpose.

'It is remarkable that all the kinds of sea-fish above 'enumerated seemed to agree very well together. No 'fighting had ever been observed by the keeper, and 'seldom any chasing of one species by another. 'None of the fish ever bred.'

Dr. Fleming has remarked, that when a salt-water fish is put into fresh water, its motions speedily be-

come irregular, its respiration appears to be affected, and unless released it soon dies, and that the same consequences follow when a fresh-water fish is suddenly immersed in salt-water.

This is not, however, the case with all fish. A cod will not only live, but thrive well in fresh-water if properly fed. A respectable fishmonger assured me that he had tried the experiment and succeeded, and offered to send me some live cod in a well-boat for my *piscatorium* in Bushy Park. Fresh-water trout have also been taken in the sea in a healthy state.*

I have observed that when fish have been bruised, or some of their scales rubbed off, a sort of white *mothery* matter forms on the place, which invariably kills them. When this begins to form they seldom move, and if they do, it is by little darts forward. The head gets lower and lower as if it was too heavy for the body, and when it touches the ground they turn up and die.

Carp will breed freely in some ponds and not in others. The Bushy Park ponds have a sandy bottom, with a fine stream of water running through them, and yet very few carp are bred in them. While in some of the muddy, stagnant ponds in Sussex, they breed freely and in great quantities. The same observation applies to tench. Great numbers of perch

* It is a curious fact, that in excavating a hill in the neighbourhood of Verona, fish of various descriptions are found in a fossil state. Some of these are fish from different countries, and what is still more extraordinary, fresh and salt-water fish are found in the same mass.

are bred in the Hampton Court and Bushy Park ponds, all of which are well supplied with running water, and with plenty of food, yet they seldom arrive at a large size. In a neighbouring pond, which is only fed with drainage water, I have caught very large perch. The perch in the water in the Regent's Park are very numerous. Those I have taken, however, are almost invariably of one size, from half to three-quarters of a pound. Why they should have arrived at this weight and not go on increasing in size, is a circumstance which it is not easy to account for. I have however, remarked it to be the case in other ponds.

Barbel grow to a large size in the river Thames. One was caught a short time ago which weighed upwards of ten pounds, and another was caught weighing thirteen pounds within these last few days.

The following Table will show the different degrees of fecundity in several kinds of fish. It was communicated to the Royal Society by Samuel Clark, Esq.

Fish.	Weight. oz	dr.	Weight of Spawn. grs.	Number of Eggs.
Carp	25	5	2,571	203,109
Codfish			12,540	3,686,760
Flounders	24	4	2,200	1,357,400
Herring	5	10	480	36,960
Mackerel	18	0	1,223½	546,681
Perch	8	9	765½	28,323
Pike	56	4	5,100½	49,304
Roach	10	6½	361	81,586
Smelt	2	0	149½	38,278
Sole	14	8	542½	100,362
Tench	40	0		383,252
Lobster			1,671	21,699

'Let me tell you the Salmon's growth is very sudden. It is
'said, that after he has got into the sea, he becomes from a
'Samlet, not so big as a Gudgeon, to be a Salmon, in as short a
'time as a gosling becomes to be a goose.' IZAAC WALTON

THE following amusing account of the sagacity of a water-dog is extracted from a work, by Dr. William Hamilton, perhaps but little known in this country. It is an interesting description of the coast of Antrim, in a series of letters. In one of them, Dr. Hamilton observes that the abundance of fish taken in the rivers of the north of Ireland, may in some measure be inferred by the fact that fourteen hundred salmon have been taken in the river Bann at one hauling of the net; and what is almost equally remarkable, near one thousand were caught at the succeeding haul. He then adds, 'now that I am 'got on the subject of fishing, let me tell you of an 'amusing instance of sagacity which I had an op'portunity of seeing a short time ago, in a water'dog of this country, which had become a most ex'cellent fisher.'

'In riding from Portrush to the Giant's Cause'way with some company, we had occasion to ford 'the river Bush, near the sea; and as the fishermen 'were going to haul their net, we stopped to see 'their success. As soon as the dog perceived the 'men to move, he instantly ran down the river of

'his own accord, and took post in the middle of it, 'on some shallows, where he could occasionally run 'or swim, and in this position he placed himself with 'all the eagerness and attention so strongly observa- 'ble in a pointer dog which *sets* his game. We 'were for some time at a loss to apprehend his 'scheme, but the event soon satisfied us, and amply 'justified the prudence of the animal; for the fish, 'when they feel the net, always endeavour to make 'directly out to sea. Accordingly one of the Sal- 'mon, escaping from the net, rushed down the stream 'with great velocity, towards the ford, where the dog 'stood to receive him at an advantage. A very di- 'verting chase now commenced, in which, from the 'shallowness of the water, we could discern the 'whole track of the fish, with all its rapid turnings 'and windings. After a smart pursuit, the dog found himself left considerably behind, in consequence of the water deepening, by which he had been reduced to the necessity of swimming. But instead of following his desperate game any longer, he readily gave it over, and ran with all his speed directly down the river, till he was sure of being again to seaward of the salmon, where he took post as before in his pointer's attitude. Here the fish a second time met him, and a fresh pursuit ensued, in which, after various attempts, the salmon at last made its way out to the sea, notwithstanding all the ingenious and vigorous exertions of its pursuer.

'Though the dog did not succeed at this time, yet I was informed that it was no unusual thing for him

'to run down his game, and the fishermen assured 'me that he was of very great advantage to them, 'by turning the salmon towards the net.

'During the whole of the chase, this sagacious 'animal seemed plainly to have two objects in 'view; one, to seize his game, if possible; and 'the other, to drive it towards the net when the 'former failed; each of which he managed with a 'degree of address and ingenuity extremely in-'teresting and amusing.'

It is somewhat unaccountable, that mankind should look, with so much horror and disgust, on any remote similitude which some of the brute creation bear to the human person and features, and yet dwell with pleasure on much nearer approaches toward, what they think, is their prerogative faculty of reason. Perhaps it may be, that a consciousness of decided superiority in the latter case, makes us observe the ingenuity of animals, without the alloy of any uneasiness from an apprehension of rivalship:—

'Reason and Instinct! who shall dare to say,
'Where one commences, and the other ends,
'So undefin'd is their affinity! ANON.

The return of salmon to their native streams is one of the most curious facts in Natural History. Indeed we may trace in them the same extraordinary instinct which is possessed by our migratory birds, and which leads them, in many instances, even soon after they have quitted their nest, to wander to far

distant climes, where they meet with that food which s congenial with their nature. So is it with the Salmon. They leave the fresh water river, little insignificant fish, not weighing perhaps more than one or two ounces, enter the vast ocean of salt water, traverse it to an extent of which we are ignorant, and in the course of a few months return to the very ame river from which they had previously migrated. In their various wanderings they must be subject to be preyed upon by many enemies. In order, however, to make up for these casualties, the ovarium of one female salmon will produce 20,000,000 ova, thus shewing the bounty of Providence in preserving to us a fish of such incalculable utility.

The growth of salmon between the time the young fish quit the river till their return to it, appears, from several authorities, to be very rapid, varying from four to ten pounds; where testimony in favour of this fact is very strong, one is, of course, induced to give credence to it. At the same time I am bound to admit from observations made on the large quantity of salmon which our numerous fishmongers exhibit from March to September, that there is some foundation for an opinion that the growth of salmon is over-rated. About the end of August young salmon may be seen not weighing more than 1½ lb. to 2 lbs.; and a very considerable portion of the salmon sent to London in the month of March, consists of fish that do not average more than 4 to 5 lbs. each. While I allow the full force of this objection, it might, I think, be accounted for from several

causes, such as locality, food, &c., but chiefly perhaps from spawn having vivified very late in the season, and the young fish produced from it having, from some cause or other, returned at an earlier period than others to their native stream. It is a known fact that there is a difference of three months between the early and late spawners in the same river. The brood of the former would probably enter the sea with every advantage of time and season. They might be able, like the swallow, to reach far distant regions, suitable to their nature and supply of food, and would commence their return when a strong migratory instinct compelled them to do so. The later brood on the contrary, for some unexplained reason, might remain near the mouth of the river they had only quitted a short time before, and if this should be the case, they would probably reenter it long before the early brood. I have ventured to mention this supposition, because I have remarked that young salmon, of from one and a half to two pounds, have generally found their way to our markets some time before those of from four to to ten pounds weight. It is not, however, one or two solitary experiments which will establish the fact of the rapid growth of the fish in question. The subject is a curious one, and I should feel thankful for any communication respecting it.

In looking over some of the proceedings of the Royal Irish Society, respecting certain fisheries in dispute with the Marquis of Donnegal, I met with the following extract, which contains some interest-

ing particulars respecting the Natural History of the Salmon. It is a part of the evidence of David Babington, Esq., the Law Agent of the Society, and his testimony in favour of the rapid growth of the salmon appears very conclusive of the fact. Mr. Babington says, that 'Salmon spawn is generally lodged 'in shallow streams or creeks in small rivers, in the 'harvest season. It is lightly covered with gravel 'by the mother fish, as they are called, and continues 'there till the months of March, April, and May 'following, when it vivifies sooner or later according 'to the heat or coolness of the season, and to the 'quantity of covering that may have been put upon 'it, and which is frequently encreased or diminished 'by the winter floods. Almost as soon as they are 'able to swim, the young brood begin to make their 'way to the sea, where their growth is so rapid, that 'although when they pass to the sea they may not 'weigh more than one or two ounces, they are found 'to return in July and August into the fresh water, 'grown to the enormous weight of from four to ten 'pounds. It is equally remarkable of this species of 'fish, that it always endeavours to return into the 'same river it was spawned in, which facts of growth 'and propensity to return to their native rivers are 'ascertained beyond a doubt by *a practice that I have 'frequently assisted in of taking up the fry in its pas- 'sage to the sea, in different rivers remote from each 'other, weighing and marking them by the introduction 'of threads of silk into the fins, cutting the fins in dif- 'ferent ways, and the like,* and entering down the re-

'spective weights and marks of each in a book, and 'afterwards catching and weighing them on their 'return. No instance was ever found of the fry 'taken up and marked in one river, being caught in 'another.'

Mr. Babington then refers to Eels, and adds that 'the eel tribe perform their functions in the very 'contrary way, and their history is not so well un-'derstood. They *spawn in the sea,* and the fry when 'not more than from one-eighth to one-fourth of an 'inch long, nor thicker than the hair of a horse's 'mane, make their way into the fresh waters in the 'summer months, and return to the sea full grown 'the following year, from whence it is conceived they 'never come back.

'Salmon are always taken in their passage '*from* the sea to fresh water, and eels in their 'passage from fresh water to the sea. Of course 'where there are two salmon fisheries in the same 'river, that next the sea must have the benefit of 'preception, and vice-versa with respect to eel 'fisheries.'

I have been assured that in order to facilitate the passage of the young eels, which emigrate from the sea along the shore in some of the Irish rivers, especially the Bann, bushes, trusses of straw, &c. may be seen placed at stated distances for many miles. These must be a great assistance to the young fry, in enabling them to stem the current.

What has been here quoted respecting eels, is

corroborative of what I have stated in another place of the propensity of these fish, when they have the power, of going to the sea or brackish water to deposit their spawn. It also agrees with the remark of an old fisherman that 'large eels have as 'strong an inclination to go down the stream, as 'young eels have to wander up.'

> 'The inferior kinds, whom forest trees
> 'Protect from heating sunbeams and the sweep
> 'Of the sharp winds—fair creatures! to whom heaven
> 'A calm and sinless life, with love, has given.'
>
> WORDSWORTH.

It is impossible to view the cheerfulness and happiness of animals and birds without pleasure. The latter, especially, appear to enjoy themselves during the fine weather in spring and summer with a degree of hilarity which might be almost envied. It is astonishing how much man might do to lessen the misery of those creatures which are either given to him for food, or use, or for adding to his pleasure, if he was so disposed. Instead of which, he often exercises a degree of wanton tyranny and cruelty over them which cannot be too much deprecated, and for which, no doubt, he will one day be held accountable. Animals are so capable of showing gratitude and affection to those who have been kind to them, that I never see them subjected to ill treatment without feeling the utmost abhorrence of those who are inflicting it. I know many persons, who, like myself, take a pleasure in seeing all the animals about them appear happy and contented. Cows will show their pleasure at seeing those who have been kind to them, by moving their ears gently, and putting out their wet noses. My old horse rests his head on the gate

with great complacency when he sees me coming, expecting to receive an apple or a piece of bread. should even be sorry to see my poultry and pigs get out of my way with any symptoms of fear.

The following little anecdote will show the gratitude and recollection of kindness shown to an animal. A young lady in this neighbourhood (who, if she should ever read this anecdote, will not, I hope, object to having had this instance of her humane disposition recorded) brought up a calf whose mother had died soon after it was born. She made a *pet* of it; but, when it became an heifer, for some reason it was parted with, and she lost sight of it for about two years. At the end of that time, as she was walking with a friend in a lane, she met some cows, when one of them left the herd and came up to her, showing evident symptoms of pleasure in seeing her. She immediately knew and patted her old acquaintance, who, after being satisfied by these marks of her favour that the recognition was mutual, quietly turned away and joined her companions.

An instance of the same grateful recognition occurred in the case of a lion which is at present, or was lately, in the Tower of London. This lion, when very young, became the property of a gentleman. He had treated it kindly; kept it some time with him abroad, and, on his return, brought it over to England, when, not knowing what else to do with it, he sent it to the Tower. Here he became extremely fierce, and was always mentioned by the keeper as an untameable animal. At the end of two

or three years the gentleman called at the Tower to visit his old acquaintance, who immediately recognized him, and upon his being admitted into his cage showed the strongest symptoms of pleasure at again seeing his former master. A story somewhat similar, is mentioned by Mr. Bingley in his 'Animal Biography.'

Various instances have also been related of the affection of dogs for their masters, refusing even to leave their bodies amidst the din and slaughter of battle. These anecdotes ought to operate in favour of the whole animal creation, and where we cannot have an opportunity of befriending, we ought, at least, to abstain from any unnecessary infliction of misery.

> 'He knew his lord: he knew, and strove to meet;
> 'In vain he strove to crawl and lick his feet,
> 'Yet—all he could—his tail, his ears, his eyes,
> 'Salute his master, and confess his joys.'

The sagacity and recollection of passed events, in some animals is very surprising. A shepherd employed to bring up some mountain sheep from Westmorland, took with him a young sheep-dog who had never made the journey before, and, from his assistant being ignorant of the ground, experienced great difficulty in having the flock stopped at the various roads and lanes he passed in their way to the neighbourhood of London. Next year the same shepherd, accompanied by the same dog, brought up another flock for the gentleman who had had the former one. On being questioned how he had got

on, he said much better than the year before, as his dog now knew the road, and had kept the sheep from going up any of the lanes or turnings which had given the shepherd so much trouble on his former journey. The distance could not have been less than four hundred miles.

A dog never again came near a gentleman of my acquaintance, who had been in the habit of feeding him, because he once offered him an oyster-shell instead of meat.

'Your swine and barn-door foules are lusty animals, but given 'withal to clamorous unseemly noise; but they are dainty 'feeding.' SLEEK FRIAR.

PIGS in general are very impatient of cold or wet, and it has often amused me to watch the care they take to guard themselves against the former. They will collect straw in their mouths and carry it under a shed in the yard, and seem to invite their companions, who are not so employed, to assist in the task, and, as the evening draws to a close, all will nestle together, after a previous struggle for the warmest berth, generally lying head to stern, probably from having found out that they are less liable to quarrel while in this position.

Virgil has noticed this propensity of the pig to collect straw for its bed, enumerating the signs of settled fine weather—

'Non ore solutos
'Immundi meminêre sues jactare maniplos:
'At nebulæ magis ima petunt, campoque recumbunt.'

'Nor sows unclean are mindful to provide
'Their nestling beds of *mouth-collected* straw.'

In hot weather pigs cover themselves with mud, probably for the purpose of freeing themselves from vermin or keeping off flies, as savages in hot climates cover themselves with grease, &c., for the same pur-

pose, and as Bruce states, that the elephant and rhinoceros do for protection against a fly of which they have a great dread, or perhaps it is done by way of cleansing their scrofulous skins. They are perfectly aware of an approaching change iu the weather, when they may often be observed leaving a field where they had previously been quietly feeding, and running to their sties at full speed, making a great outcry the whole of the way. If they hear one of their companions in distress, they show not only sympathy for him, but endeavour to assist him to the utmost of their power; and such is the affection of a sow for her young, that it requires some little care to deprive her of one of them.

I take great delight in observing the habits of the animals in my farm-yard. The old gander watches the sitting goose with great care, and will sometimes take his place on her nest. He is always forward to protect the goslings, and hisses at and runs after anything from which he apprehends danger. The cock struts before the hens, and never seems so happy as when he collects them about him to feast upon a grain of corn or an insect which he has found. This gallantry is, I believe, peculiar to our domestic cock, and does him no little credit. He fights to the last extremity with any intruder, and if he is beaten, appears to consider himself unworthy of the society of his former mates, and mopes in a corner, the very picture of wretchedness.

Hen turkies are dull and seem less capable of enjoyment than any birds I know. I have watched

them stretching out their necks, and stupidly looking for a quarter of an hour together at a small tuft of grass, making short, low cries all the time. On going up to examime what occasioned this unusual movement, I have found a toad or frog concealed in the grass. Curiosity, more than fear, appeared to have attracted the turkies to the spot. They are bad mothers, and frequently trample on their young, appearing to disregard their cries. Unlike the hen, they do not take any trouble in procuring food for their young. Ducks are in a prodigious bustle when they quit their nests for food, and make a great outcry when the drake comes up to greet their arrival again in the poultry-yard. They run into the pond, flap their wings, and then come out, and are very clamorous till food is brought them. The young ducks, as soon as they are hatched, take to the water, and dart after flies with the greatest activity. I am always sorry to see the anxiety and misery of a hen who has hatched ducks, instead of her natural progeny. When they take to the water she is in a perfect agony, running round the brink of the pond, and sometimes flying into it, in hopes of rescuing her brood from the danger she apprehends them to be in. A friend of mine observed a remarkable instance of the degree to which this natural apprehension for her brood may be overcome in the hen by the habit of nursing ducks. A hen, who had reared three broods of ducks in three successive years, became habituated to their taking to the water, and would fly to a large stone in the middle of the

pond, and patiently and quietly watch her brood as they swam about it. The fourth year she hatched her own eggs, and finding that her chickens did not take to the water as the ducklings had done, she flew to the stone in the pond, and called them to her with the utmost eagerness. This recollection of the habits of her former charge, though it had taken place a year before, is not a little curious.

———'The poor wren,
'The most diminutive of birds, will fight—
'Her young ones in the nest—against the owl.'

I HAVE always great pleasure in seeing the affection which animals have for their offspring, and which sometimes shows itself in an extraordinary and incongruous manner. A hen who has hatched young ducks will follow them in her agony into the water, and will even sacrifice her life to preserve the lives of her chickens, and whoever has seen a dog break into a covey of young partridges will have had one of the strongest proofs which I know, of the force of natural affection. An instance of parental attachment in a bird was recently related to me which gave me much pleasure, A gentleman in my neighbourhood had directed one of his waggons to be packed with sundry hampers and boxes, intending to send it to Worthing, where he was going himself. For some reason his going was delayed; and he therefore directed that the waggon should be placed in a shed in his yard, packed as it was, till it should be convenient for him to send it off. While it was in the shed a pair of robins built their nest among some straw in the waggon, and had hatched their young just before it was sent away. One of the old birds, instead of being frightened away by the motion of the waggon, only left its nest from time to time for the

purpose of flying to the nearest hedge for food for its young; and thus alternately affording warmth and nourishment to them, it arrived at Worthing. The affection of this bird having been observed by the waggoner, he took care in unloading not to disturb the robin's nest; and my readers will, I am sure, be glad to hear that the robin and its young ones returned in safety to Walton Heath, being the place from whence they had set out. Whether it was the male or female robin which kept with the waggon I have not been able to ascertain; but most probably the latter, as what will not a mother's love and a mother's tenderness induce her to perform?

The distance the waggon went in going and returning, could not have been less than one hundred miles.

Fishing the other day in Hampton Court Park, I disturbed a moor-hen who had just hatched, and watched her anxiety and manœuvres to draw away her young. She would go a short distance, utter a cry, return, and seemed to lead the way for her brood to follow. Having driven her away, that I might have a better opportunity of watching her young ones, she never ceased calling to them, and they made towards her, skulking amongst the rushes, till they got to the other side of the pond. They had only just left the shell, and had probably never heard the cry of their mother before.

If you go near the nest of a lapwing, one of the old birds will fly close to you, and try to draw you from the nest. I have seen my dog almost struck

by one of the birds as she flew past him; and they seem quite to forget their own danger in the endeavour to preserve their offspring. It is said that when a hind hears the hounds she will allow herself to be hunted, in order to lead them away from her fawns. Every one knows how bold a hen is in defence of her chickens. The following instance of affection in a bitch for her young was communicated to me by a friend of mine, an officer in the 15th hussars. He had a favourite bull-bitch who had puppies, and thinking as they grew older that they were making her too thin and weak, he took them from her and shut them up in a sort of coop in a yard to which he thought she could not have access. She was seen, however, getting over the wall of the yard; and finding that her puppies could not get at her to suck her, she emptied the contents of her stomach into the place where her young were confined, and continued to do this two or three times a day for some time. She had no difficulty in procuring as much food as she wanted, and conveyed it to her puppies in the manner mentioned. I have always considered this as one of the most curious instances I have met with of animal affection, and indeed of almost reason, as instinct alone would not have taught her this method of feeding her offspring.

We read also of a poor bitch who, while undergoing the agonies of a brutal dissection, licked her new-born offspring with the utmost fondness; and foxes, when pursued by hounds, have been known to carry one of their young in their mouth for many miles.

Those agreeable naturalists, Messrs. Kirby and Spence, are of opinion that insects are capable of feeling quite as much attachment to their offspring as the largest quadruped. They assert that they undergo as severe privations in nourishing them, expose themselves to as great risk in defending them, and in the very approach of death exhibit as much anxiety for their preservation. I had an instance of this the other day in the case of a spider, and I watched its whole proceeding with infinite gratification. I found a spider's nest in the under part of the broad leaf of the striped garden-grass. It was covered with a thick sort of silky web or cocoon with an opening to enable the spider to go in and out. On taking off the covering, which consisted of two different layers, I found a deposit of eggs closely packed together, and the whole collection was about the size of a large pea. Having completely exposed the eggs, I put the spider and a part of the leaf, to which the eggs were attached, under a glass. In turning down the glass, the spider was at the upper part of it, but she no sooner perceived her eggs than she ran to them with the greatest eagerness—covered them as much as she was able with her body, sensible, no doubt, how necessary warmth was for them—and soon began to spin another silky web over them. Nothing seemed capable of disturbing her during this process, and there was no mistaking her affection for, and attention to, her eggs. This she showed in another remarkable way. I had placed the portion of striped grass, which was nearly two inches in length,

and about three-quarters of an inch in breadth (being that part to which the eggs were attached), under a glass upon a marble mantel-piece in my sitting-room. One of the first operations of my poor spider, as I said before, was to cover her eggs with a web. She then proceeded to fix one of her threads to the upper part of the glass which confined her, and carried it to the further end of the piece of grass, and in a short time had succeeded in raising it up and fixing it perpendicularly, working her threads from the sides of the glass to the top and sides of the piece of grass. There was no mistaking her motives in doing this. She not only rendered her precious charge more secure than it would have been had it remained flat on the marble, but she was probably aware that the cold from the marble would chill her eggs, and prevent their arriving at maturity: she therefore raised them from it in the manner I have described. On the evening of the fourth day after I had confined the spider, two of her eggs were hatched. On coming into my room the next morning, neither eggs nor young spiders were to be seen. I was satisfied that they could not have made their escape, as the edges of the glass rested on the marble so closely that the point of a needle could not be introduced under them. After minutely examining the spider, I was perfectly sure that not one of her young had attached itself to any part of her body, in the manner described by Mr. Kirby.* The abdomen of the spider was how-

* Mr. Kirby says, the young of the spider (*aranea saccata)* attach themselves in clusters upon the back, belly, head, and

ever three times the size it had been the day previous, being very much distended, and shining as the abdomen of a bee does when it returns to the hive loaded with honey.

Those who witnessed the altered appearance of the spider were, like myself, convinced that the young had been introduced into the abdomen: and of this circumstance there could be no doubt. The death of the spider soon afterwards prevented further observations.

There is a large breed of spiders which are found very generally in the palace of Hampton-Court They are called there 'cardinals,' having I suppose been first seen in Cardinal Wolsey's hall. They are full an inch in length, and many of them of the thickness of a finger. Their legs are about two inches long, and their body covered with a thick hair. They feed chiefly on moths, as appears from the wings of that insect being found in great abundance under and amongst their webs. In running across the carpet in an evening, with the shade cast from their large bodies by the light of the lamp or candle, they have been mistaken for mice, and have occasioned no little alarm to some of the more nervous inhabitants of the palace. A doubt has even been raised whether the

even legs of the mother; and that in this situation, where they present a very singular appearance, she carries them about with her, and feeds them until their first moult. Upon disturbing her, thus covered by hundreds of her progeny, it was amusing to see them all leap from her back, and run away in every direction.

name of cardinal has not been given to this creature from an ancient supposition that the ghost of Wolsey haunts the place of his former glory under this shape. Be this as it may, the spider is considered as a curiosity, and Hampton-Court is the only place in which I have met with it.

The common earwig has generally a brood of young ones about her at this time of the year, and she shows the greatest care and anxiety for their safety. If she is disturbed, nothing can exceed her agitation. She must have some means of collecting her young together after they have been scattered. I have seen them fall to the ground from a height of two or three feet, and re-assemble at the same place again. Mr. Kirby says that 'this insect sits upon 'her eggs, and approaches the habits of the hen in 'the care of her family. As soon as the young are 'hatched, they creep like a brood of chickens under 'the belly of the mother, who will sit over them for 'hours together, and shows the greatest agitation 'when she is disturbed.'

'I will say a few words on winged insects, which, in their 'origin and metamorphoses, offer the most extraordinary known 'miracles perhaps of terrestrial nature.'—SALMONIA.

A LOVER of natural history cannot I think be a bad man, as the very study of it tends to promote a calmness and serenity of mind favourable to the reception of grateful and holy thoughts of the great and good Parent of the universe. He cannot be a cruel man, because he will be unwilling wantonly to destroy even an insect, when he perceives how exquisitely each of them is contrived, and how curiously it is made for the station it is destined to fill in the animal world. Few things have afforded me greater pleasure than watching the wonderful instinct which induces insects to watch over and protect their offspring. An instance of this occurred under my own observation in the case of a sand-wasp. This animal was observed to fly backwards and forwards very frequently from the side of a window to a gravel walk near it. After some time it was perceived that she collected the finest particles of sand from the walk, with which, under a projection of the window, she formed a cell. When the cell was completed she flew to a neighbouring bush, from whence she selected a little green caterpillar, which with some difficulty she contrived to force into the cell. Having

next deposited an egg on the caterpillar, she covered over the top of the cell with a sort of paste made of fine sand, sloping it so that no rain could rest upon it. In this manner four different cells were completed. After a lapse of some time the young wasps emancipated themselves and disappeared. There seems no reason to doubt but that the caterpillars which were so curiously introduced into the cells served not only to protect the young brood from too much heat or cold, which they would have been subject to had they merely been deposited at the bottom of an empty cell, but also for food, till they were capable of extricating themselves from their state of confinement.

Another insect also of the *sphex* genus will dig a hole in sandy ground, drag a large spider, or the caterpillar of a *phalæna,* into it—lame it by biting off its legs—and then lay an egg in each hole; so that the larva may suck out the spinning-fluid of the animal which the mother has buried, and in that way prepare itself a habitation in which to pass through its metamorphosis.*

The following remarks on insects are selected from Blumenbach's Elements of Natural History, and may interest those who have not had access to his works.

'It has been calculated that the abdomen of the 'female white ant, when about to lay her eggs, is two 'thousand times larger than previous to impregna- 'tion. She can lay eighty thousand eggs within

* Blumenbach.

'twenty-four hours. Insects which undergo meta-'morphosis are called larvæ, whilst in the state in 'which they escape from the egg. They are mostly 'very small on their first appearance, so that a full-'grown caterpillar of the willow-moth, for instance, 'is seventy-two thousand times heavier than when it 'issues from the egg. On the other hand, they 'grow with great rapidity, so that the maggot of the 'meat-fly, at the end of twenty-four hours, is one 'hundred and fifty-five times heavier than at its 'birth.

'The carrion-beetle *(vespilio)* scents from a distance 'the bodies of small animals, as moles, frogs, &c., 'and buries them under ground for the purpose of 'depositing its eggs. Six of them will bury a mole 'a foot deep in less than four hours.

'The eyes of insects are of two kinds; the first 'are large hemispheres, mostly composed of thou-'sands of facets, but in some instances of numerous 'conical points, and covered on the inner surface with 'a layer sometimes glittering, sometimes variegated. 'Those of the second kind are simple, small, and vary 'as well in number as position. Eyes of the first 'kind seem calculated for seeing at a distance—of 'the second for looking at near objects. Only a few 'insects can move their eyes.

'The *antennæ* are organs of feeling, which are of 'great importance to insects, on account of their hard, 'insensible covering, and the immobility of their eyes. 'They appear to possess their most acute feeling in 'the antennæ, as man has in the tips of his fingers;

'and as for the most part they live in darkness, supply the want of light by this contrivance.

'The eggs of some insects are covered with a kind of varnish, to protect them from the destructive influence of rain and other accidents.'

It would however be an endless task if I were to enter into all the wonders of the insect creation. Latreille says, 'that the wisdom of the Creator never appears to excite our admiration more than in the structure of the most minute beings which seem to conceal themselves from observation; and Almighty Power is never more strikingly exhibited than in the concentration of organs in such an atom. In giving life to this atom, and constructing in dimensions so minute so many organs susceptible of different sensations, my admiration of the Supreme Intelligence is much more heightened than by the contemplation of the structure of the most gigantic animals.'

—the swan with arched neck
'Between her white wings mantling proudly, rows
'Her state with oary feet.'—MILTON.

LIVING on the banks of the Thames, I have often been pleased with seeing the care taken of the young swans by the parent birds. Where the stream is strong the old swan will sink herself sufficiently low to bring her back on a level with the water, when the cygnets will get upon it, and in this manner are conveyed to the other side of the river, or into stiller water. Each family of swans on the river has its own district; and if the limits of that district are encroached upon by other swans, a pursuit immediately takes place, and the intruders are driven away. Except in this instance, they appear to live in a state of the most perfect harmony. The male is very attentive to the female, assists in making the nest, and when a sudden rise of the river takes place, joins her with great assiduity in raising the nest sufficiently high to prevent the eggs being chilled by the action of the water, though sometimes its rise is so rapid, that the whole nest is washed away and destroyed.

The following instance of attachment in these birds has recently come under my observation. A pair of swans had been inseparable companions for three years, during which time they had reared three broods of cygnets: last autumn the male was killed, and

since that time the female has separated herself from all society with her own species; and though at the time I am writing (the end of March) the breeding season for swans is far advanced, she remains in the same state of seclusion, resisting the addresses of a male swan who has been making advances towards forming an acquaintance with her, either driving him away, or flying from him whenever he comes near her. How long she will continue in her present state of widowhood I know not, but at present it is quite evident that she has not forgotten her former partner.

This puts me in mind of a circumstance which lately happened at Chalk Farm, near Hampton. A man, set to watch a field of peas which had been much preyed upon by pigeons, shot an old cock pigeon which had long been an inhabitant of the farm. His mate, around whom he had for many a year cooed, and nourished from his own crop, and assisted in rearing numerous young ones, immediately settled on the ground by his side, and showed her grief in the most expressive manner. The labourer took up the dead bird and tied it to a short stake, thinking that it would frighten away the other depredators. In this situation however his partner did not forsake him, but continued, day after day, walking slowly round the stick. The kind-hearted wife of the bailiff of the farm at last heard of the circumstance, and immediately went to afford what relief she could to the poor bird. She told me that, on arriving at the spot, she found the hen bird much exhausted, and that she had made a circular beaten track round the dead pigeon, making

now and then a little spring towards him. On the removal of the dead bird, the hen returned to the dove-cot,

'Like to a pair of loving turtle-doves,
'That could not live asunder day or night.'—SHAKSPEARE.

The only instance I have met with in which the hen bird has not the chief care in hatching and bringing up the young is in the case of the emus at the farm belonging to the Zoological Society near Kingston. A pair of these birds have now five young ones: the female at different times dropped nine eggs in various places in the pen in which she was confined. These were collected in one place by the male, who rolled them gently and carefully along with his beak. He then sat upon them himself, and continued to do so with the utmost assiduity for nine weeks, during which time the female never took his place, nor was he ever observed to leave the nest. When the young were hatched,* he alone took charge of them, and has continued to do so ever since, the female not appearing to notice them in any way. On reading this anecdote, many persons would suppose that the female emu was not possessed of that natural affection for its young which other birds have. In order to rescue it from this supposition, I will mention that a female emu belonging to the Duke of Devonshire at Chiswick lately laid some eggs; and as there was no male bird, she collected them together herself and sat upon them.

* There are now (June) five young emus alive, and appearing perfectly healthy.

'Well, it happened to one of the labouring men, in breaking 'the stones to make metal for the roads, that he broke a stone 'that was both large and remarkable; and in the heart of it, 'which was boss, there was found a living creature, that jumped 'out the moment it saw the light of heaven.—It was just a 'yird toad.'—ANNALS OF THE PARISH.

I REMEMBER some years ago getting up into a mulberry-tree, and finding in the fork of the two main branches a large toad almost embedded in the bark of the tree, which had grown over it so much that he was quite unable to extricate himself, and would probably in time be completely covered over with the bark. Indeed, as the tree increased in size, there seems to be no reason why the toad should not in process of time become embedded in the tree itself, as was the case with the end of an oak rail that had been inserted into an elm-tree, which stood close to a public footpath. This, being broken off and grown over, was, on the tree being felled and sawn in two, found nearly in the centre of it. The two circumstances together may explain the curious fact of toads having been found alive in the middle of trees, by showing that the bark having once covered them, the process of growth in the tree would annually convey the toad more nearly to the centre of it, as happened with the piece of oak-rail; and by showing that toads, and probably other am-

phibia, can exist on the absorption of fluids by the skin alone. This is confirmed by the following fact. A gentleman informed me that he put a toad into a small flower-pot, and secured it so that no insect could penetrate into it, and then buried it in the ground at a sufficient depth to protect it from the influence of frost. At the end of twenty years he took it up, and found the toad increased in size, and apparently healthy. Dr. Townson, in his tracts on the respiration of the amphibia, proves, I think satisfactorily, from actual experiment, that, while those animals with whose economy we are best acquainted receive their principal supply of liquids by the mouth, the frog and salamander tribes take in theirs through the skin alone; all the aqueous fluid which they take in being absorbed by the skin, and all they reject being transpired through it. He found that a frog absorbed nearly its own weight of water in the short time of an hour and a half, and that, by being merely placed on blotting-paper well soaked with water; and it is believed that they never discharge it, except when they are disturbed or pursued, and then they only eject it to lighten their bodies, and facilitate their escape. That the moisture thus imbibed is sufficient to enable some of the amphibia to exist without any other food, there cannot I think be a reasonable doubt; and if this is admitted, the circumstance of toads being found alive in the centre of trees is accounted for by this and the preceding facts related.*

* In one of the volumes published by the Academy of Sciences at Paris there is an account of a live toad being in

In additional proof however of what has been advanced, I may mention that the respectable proprietor of some extensive coal-mines in Staffordshire informed me that his men, in working into a stratum of thick coal at a very considerable depth, found what they called three live eels in a small deposit of water in the centre of a block of coal,* which died as soon as they were taken out of it. Another case was mentioned to me by an eminent physician. A wet spot had always been observed on a freestone mantelpiece, which afterwards cracked at that place, and upon its being taken down, a toad was found in it, dead; but its death was probably owing to the want of that moisture which it had been enabled to imbibe when

the centre of an elm-tree, and of another in an oak. Both trees were sound and thriving. There is also a well-authenticated account in the Annual Register of a toad being found in the middle of a large and hard stone, which had no visible aperture by which it could get there.

* As this assertion may astonish the geologists, I think it right to mention that the gentleman who communicated the circumstance to me did not see the eels himself, but heard it from his workmen, who, however, one would think could have no object in deceiving him in a matter of this sort. The men called them eels, but they might possibly be the genus of amphibia living in dark caverns, the Proteus, of which Sir Humphrey Davy has given an account in his 'Consolations in Travel.' I am not aware of any communication with the external world by which eels could reach the place where they were said to have been found. The men in question made an affidavit of the fact before a magistrate. The Staffordshire colliers are a peculiar and remarkably fine race of men and not given to fiction.

the stone was in the quarry, and which gradually lessened by the action of the fire, as from the moisture which appeared on that part of the mantelpiece, some time after it was put up, there seems but little reason to doubt that the toad was alive at that time.*

I may here mention a curious observation I made in regard to some frogs that had fallen down a small area which gave light to one of the windows of my house. The top of the area, being on a level with the ground, was covered over with some iron bars, through which the frogs fell.

During dry and warm weather, when they could not absorb much moisture, I observed them to appear almost torpid; but when it rained they became impatient of their confinement, and endeavoured to make their escape, which they did in the following manner. The wall of the area was about five feet in height, and plastered and whitewashed as smooth as the ceiling of a room. Upon this surface the frogs soon found that their claws would render them little or no assistance; they therefore contracted their large feet, so as to make a hollow in the centre, and by means of the moisture which they had imbibed in consequence of the rain, they contrived to produce a vacuum, so that by the pressure of the air on the extended feet (in the same way that we see boys take up a stone by means of a piece of wet leather fastened to a string) they ascended the wall, and made their

* Blumenbach, in his Elements of Natural History, says that it is indisputable that living toads have been found in sawing through blocks of stone, trees, &c.

escape. This happened constantly in the course of three years.

It is a curious fact that toads are so numerous in the island of Jersey, that they have become a term of reproach for its inhabitants, the word 'Crapaud' being frequently applied to them; while in the neighbouring island of Guernsey not a toad is to be found, though they have frequently been imported. Indeed, certain other islands have always been privileged in this respect. Ireland is free from venomous animals, of course by the aid of St. Patrick. The same was affirmed of Crete in olden times, being the birthplace of Jupiter. The Isle of Man is said also to be free from venomous creatures. The Mauritius, and I believe one of the Balearic islands, enjoys the same immunity.

'The snake, renew'd in all his speckled pride
'Of pompous youth, has cast his slough aside;
'And in his summer livery rolls along
'Erect, and brandishing his forked tongue.'—DRYDEN

WHEN I was lately at Brighton I met with a man who employed himself in summer in catching adders, the fat of which he preserved and sold as a sovereign remedy for hurts and swellings, and some other parts of the animal went to the apothecaries to be used in their materia medica. This man in catching adders used a forked stick and a shorter one. With the first he pinned the adder to the ground, and killed it with the other. He was accompanied by a dog, who hunted for these animals, and who, when he had found one, contrived generally to seize it by the middle, and shake it with so much rapidity against the sides of his head, that not one adder in a hundred had time to bite him before he killed it. His owner however informed me that when this happened his head instantly swelled, but the swelling was almost as quickly removed by rubbing it with some of the fat of adders, which he always carried about with him for the purpose. Twenty-five adders yielded about half a pound weight of fat. They feed on worms, mice, frogs, and young birds; and before the winter sets in, would appear to quit the open downs,

where they are found in summer, for the neighbouring woods, as a woodman told me he had found near sixty of them clustered together in a torpid state, in grubbing up an old tree in one of Lord Chichester's woods. They will however hybernize (if I may use the word) with the common snake and the slow or blind worm,* each of these having been found with some vipers in a torpid state, on digging a drain in the grounds of Burwood Park, at Walton on Thames, a short time ago. The viper-catcher whom I met with near Brighton assured me that he had frequently seen the young vipers take refuge in the inside of their mother by running into her mouth, which she opens for that purpose when danger is apprehended. He also assured me that they are produced alive, the ova being hatched in the inside of the mother, from which they probably creep, as they must do at a more advanced state, after they have made it their place of refuge.† He also informed me that, by letting vipers bite a piece of rag, and then suddenly snatching it from their mouth, he

* In America it is a spring amusement for the farmers to go in search of snakes while hybernizing, when they find them in caves and clefts of rocks, knotted together by hundreds. The stench is stated to be sometimes intolerable. Bartram has some curious particulars respecting snakes

† The mode of parturition stated by the viper-catcher is generally supposed to be a vulgar error. He seemed however very confident that he was right. May not the viper, like the lizard, be ovo-viviparous? Some naturalists are of the same opinion as the viper-catcher mentioned, viz. that the eggs are hatched in the womb.

easily extracted the fangs, and that he then frequently put them between his shirt and skin, and brought them away alive.

Snakes are easily tamed, an instance of which is mentioned in Mr. White's Naturalists' Calendar; and there is a stuffed specimen of a snake now in the Zoological Museum, which when alive was perfectly tame, and had been eleven years in the possession of the gentleman who presented it to that society, and to whom it showed a strong attachment. Eton boys have always been great tamers of snakes, and many anecdotes are related by them of their attachment to their owners.

Snakes, unlike the viper, are oviparous, and their eggs are linked together in a sort of chain, and are each about as big as a large marble. They feed on frogs, mice, certain insects, and also young birds. It is supposed by some people that they destroy the eggs of partridges and pheasants; and for this reason many gamekeepers make a point of killing them. Snakes have sometimes been found on the branches of trees, where they have contrived to get in search of young birds. A person lately informed me that he had found one in that situation. A snake has been seen to swallow a newly-hatched chicken; and I once observed one in the act of attempting to swallow a full-grown frog. I was attracted to the spot by the cries of the latter, which were very loud and piteous. The snake made great efforts to get the frog down his throat, which he at last succeeded in doing. By trampling on a snake which has just swallowed a

frog, the latter is easily ejected from the stomach of the former.

The fact of snakes annually casting their skin or slough is very curious. I have found the slough of one twisted among some young quicksets in a hedge-row, and appearing perfectly fresh. Shakspeare seems to have been aware of this.

' —— There the snake throws her enamell'd skin.'
MIDS. NIGHT'S DREAM.

The circumstance of the slough being twisted in the way I found it amongst some twigs seems to prove that the snake had not been able to rid himself of it without having recourse to something not very pliable which would assist her in the operation, although Mr. White says that he had found the slough in a field near a hedge. His account is very agreeable. He says, ' About the middle of this month (Septem-' ber) we found in a field, near a hedge, the slough ' of a large snake, which seemed to have been newly ' cast. From circumstances it appeared to have been ' drawn off backward, like a stocking or woman's ' glove. Not only the whole skin, but the scales ' from the very eyes, were peeled off, and appeared ' in the head of the slough like a pair of spectacles. ' The reptile, at the time of changing his coat, had en-' tangled himself intricately in the grass and weeds; ' so that the friction of the stalks and blades might ' promote this curious shifting of his exuviæ.

' —— Lubrica serpens
' Exuit in spinis vestem.'—LUCRET.

' It would be a most entertaining sight could a

'person be an eye-witness to such a feat, and see the 'snake in the act of changing his garment. As the 'convexity of the eyes in the slough is now inward, 'that circumstance alone is a proof that the skin has 'been turned; not to mention that now the present 'inside is much darker than the outer. If you look 'through the scales of the snake's eyes from the 'concave side, viz. as the reptile used them, they 'lessen objects much. Thus it appears, from what 'has been said, that snakes crawl out of the mouth 'of their own sloughs, and quit the tail part last, 'just as eels are skinned by a cookmaid. While the 'scales of the eyes are growing loose, and a new skin 'is forming, the creature in appearance must be 'blind, and feel itself in a very awkward and uneasy 'situation.'

'The nest of a bird is one of those daily miracles, that, from 'its familiarity, is passed over without regard.'

His late Majesty, William IV., when residing in Bushy Park, had a part of the mizen mast of the Victory, against which Lord Nelson was standing when he received his fatal wound, deposited in a small temple in the grounds of Bushy House, from which it was afterwards removed, and placed at the upper end of the dining-room, with a bust of Lord Nelson upon it.* A large shot had passed completely through this part of the mast, and while it was in the temple a pair of robins had built their nest in the shot hole, and reared a brood of young ones. It was impossible to witness this little occurrence without reflecting on the scene of blood, and strife of war, which had occurred to produce so snug and peaceable a retreat for a nest of harmless robins. If that delightful poet of the lakes, Mr. Wordsworth, should ever condescend to read this little anecdote, it might supply him with no bad subject for one of his charming sonnets.

There is something extremely curious in the situations which birds sometimes select to build their nests in. Mr. White, in his Natural History of Selborne, mentions two remarkable facts of swallows

* This piece of the mast with the bust is now in the armoury of Windsor Castle.

having built their nests in odd situations, one on the handles of a pair of garden-shears, which were stuck up against the boards of an outhouse: and the other on the wings and body of an owl that happened by accident to hang dead and dry from the rafter of a barn. Having occasion myself to call some years ago on the Rev. Egerton Bagot, of Pipe Hayes in Warwickshire, I was surprised at seeing a swallow's nest built on the knocker of his hall door, and the parent bird in the act of incubation. When the door was opened (a circumstance which occurred frequently in the course of the day), the bird left her nest for an instant, but returned to it as soon as the door was shut. I afterwards learnt that the swallow hatched, and that her young arrived at maturity. Some birds indeed show great boldness in the situation in which they build their nests, as if they depended on the kindness and protection of those under whose care they seem to place themselves. Thus a whitethroat had its nest for three years on a vine close to my parlour window, where it was quite open to observation; and a robin built on the shelf of my greenhouse, which was constantly visited, and the bird looked at while sitting; but she never left her nest at those times, and seemed perfectly secure and contented. There is something very agreeable to me in this confidence of protection, which I like to think that I have produced by constantly feeding them in winter, and never allowing their nests to be taken.

A robin, when its young are in danger, has a peculiarly plaintive note, which I am well acquainted

with, and which I never hear without going to its assistance, when I generally find that a cat has occasioned the call for help by prowling near the nest containing the young birds.*

Robins, more than any other birds I have noticed, vary the form of and the materials with which they build their nests, according to the situation in which they are placed. Thus the robin which had its nest on the shelf of the greenhouse surrounded it with a great quantity of oak-leaves; while another, which for two years built amongst the straw which covered some sea-cale in my kitchen-garden had its nest composed of a small quantity of moss only, and lined with hair. Another, which built in a trained gooseberry-bush against a wall, used also moss and hair, with some few oak-leaves; and in some instances, where robins have used a large hole in a

* I may here mention a curious fact which was communicated to me by a gentleman who had it from Mr. Knight of Downton. A fly-catcher built in his stove for several successive years. He observed that the bird quitted its eggs whenever the thermometer was above (he thinks) 71° or 72°, and resumed her place upon the nest when the thermometer sunk below again. This fact leads us to account for another, respecting ostriches, which are observed by travellers to be absent from their eggs in the day-time, but may sit upon them during the night. That they do this is shown by the fact of the ostrich feathers being of less value during the period of incubation than they are before and after. At that time they are tinged with red, which the Hottentots say is occasioned by their sitting on the red earth to hatch their eggs. I have this information from Mr. Birchall, who however says that he never saw an ostrich on the nest in the day-time.

bank to build their nest in, the sides of the hole have been completely filled in with a great quantity of oak-leaves. I mention this the more particularly, because, in a delightful work on the Architecture of Birds, which I have just seen, the ingenious and observant author of many curious remarks in it, says that oak-leaves are seldom if ever used for the foundation of the redbreast's nest. I am more inclined to think that some birds, and the robin amongst the number, vary the materials with which their nests are built, not so much from the difficulty of procuring them, as for the purpose of assimilating their nests more nearly to the appearance of the objects which surround the situation in which they are built. I have observed this in a wren's nest, built in the thatch of a shed, and in another in a hay-rick, both of which had the external appearance of their nests different.* I have also observed that, when a chaffinch has built its nest against the branch of some tree, the moss or lichens which compose the exterior part of the nest are similar in appearance to those which are found on the tree itself; so that it is sometimes very difficult to perceive the nest. This fact is curious, as it shows a powerful instinctive foresight, and may account to the ingenious naturalist

* I have a wren's nest in my possession, built amongst some litter thrown into a yard. It so nearly resembled the surrounding objects, that it was only discovered by the birds flying out of it. Some of the straws which compose it are so thick, that one wonders how so small a bird could have used them.

above referred to for his not having found two chaffinches' nests exactly alike amongst the twelve specimens in his collection.

Since writing the above, I have had the nest of a long-tailed titmouse brought to me, built on the branch of an elm in Bushy Park. The branch is about the thickness of a man's leg, and the nest is so artfully placed upon it, and made so nearly to resemble the knot of a tree, that it is extremely difficult to perceive that it is a nest. In order to render the deception more perfect, the nest is by no means too large an excrescence from the branch, which it would be if it was as large as those built by the same species of birds in more concealed situations. On the contrary, it is small and compact, and covered with lichens so nearly resembling the bark of the elm, that although the branch of the tree overhangs a footpath, along which at least thirty workmen passed and repassed four times a day, and the nest was not more than two feet above their heads, it was only at last seen by one of them.

This nest has a feather fixed so as to overhang the entrance, forming a sort of valve, and which was pushed in or out as the birds left the nest or came into it. It must have been placed there, one would think, to add to the warmth of the nest during the very cold weather which prevailed at the time the birds were laying their eggs.

The nest of the wood pigeon, although composed of the rudest materials (only a few dead sticks), will be found admirably calculated for the purpose of

concealment. How often have I observed the strong, rapid flight of a wood-pigeon from a tree, and heard the noise produced by his wings, and then looked up into the tree, expecting to see his nest, without being able to perceive it. This has been owing to the various deposits of dead leaves and small branches which have been accumulated in various parts of the tree, and which have exactly the same appearance which the nest of the wood-pigeon has.

I must also mention a curious instinctive property which I have observed in some birds, tending very materially to the preservation of their young.

The excrement of the young of many birds who build their nests without any pretensions to concealment, such as the swallow, crow, &c., may at all times be observed about or under the nest, while that of some of those birds whose nests are more industriously concealed is conveyed away in the mouths of the parent birds, who generally drop it at a distance of twenty or thirty yards from the nest. Were it not for this precaution, the excrement itself, from its accumulation, and commonly from its very colour, would point out the place where the young were concealed.

As soon as the birds are ready to fly, or nearly so, the old birds do not consider it any longer necessary to continue to remove the excrement.

It is a curious fact that the males of migrating birds, or at least of some species, arrive some weeks before the females. An experienced and intelligent

bird-catcher assures me that the male nightingale generally makes its appearance in this country about the first of April, and the female about a month afterwards; and that his song increases in power, and is longer continued, when the period for the arrival of the female is near at hand. A favourite bush having been selected, the nightingale awaits the appearance of his mate in or near it, singing his song of love, and greeting her arrival with all the little blandishments of affection. When she begins to sit, his song is less frequent and less powerful, and ceases soon after the young are hatched.

The black-cap, whose song is scarcely less pleasing than that of the nightingale, arrives also some time before the female, and calls her to him in the same *poetical* manner. I have one of these birds in my possession: his song is wild and sweet; and, as Mr. White says, when he sings in earnest, he pours forth very sweet but inward melody, and expresses great variety of soft and gentle modulations, superior perhaps to those of any of our warblers, the nightingale excepted.

The bird-catcher above referred to showed me his call-birds, and gave me some proofs of their skill. On seeing strange birds, they immediately begin their call, which is succeeded by their song, and this seldom ceases till the wild birds are trapped. He says the call-birds then show a degree of pleasure which cannot be mistaken; and he seems persuaded that his birds are fully aware of the purpose for which their call and song are required.

The wheatear arrives about the middle or end of March, and builds its nest in rabbit-burrows. At least they do so occasionally, as I have had one brought to me which was found in digging out a rabbit. A shepherd whom I met on the Brighton Downs informed me that these birds are annually getting less numerous, and forsaking those haunts which they formerly most frequented.

Magpies congregate in considerable numbers on the Brighton Downs, as we counted last winter from twenty to thirty in a flock. Probably the want of wood keeps them together as a precautionary measure; and they have a scout, like the crow, who looks out for danger while his companions are feeding. They seemed very wild, and took long flights on being disturbed.

The periodical flight of birds is very curious. That in the spring is much less considerable than the autumnal one; September, October, and November being the chief months for the passage of various kinds of birds. Bird-catchers state that the flights take place from daybreak to twelve at noon, and sometimes from two o'clock till it is nearly dark. Birds fly against the wind during their passage, with the exception of the chaffinch, who flies across it. The male chaffinches are observed to fly by themselves, and are shortly followed by the females. This is also the case with the titlark.

Birds flock together in February, for the purpose of choosing their mates; and probably in the autumn, for leading their young to places where they can

procure food, or enjoy a climate congenial with their nature. Many flocks of birds, however, appear and disappear in places where they had not previously been seen for many years. In the month of December, 1818, a very large flock of the small wild blue pigeon passed along the coast of Sussex, and many of them were shot near Brighton. These birds were formerly very numerous in this country, but are, I believe, now seldom met with. The last I saw was a pair, about ten years ago, who had built amongst some rocks, in a small bay near Swansea. The most extraordinary instance, however, I have witnessed of the sudden congregation of birds, occurred in the summer of the same year, which was a particularly hot and dry one. No rain had fallen for some weeks previous to the 26th of July. Flowers of every description had entirely disappeared, and the ground was parched to an extraordinary degree. About six o'clock in the evening of that day, some rain fell. I was at the time standing at a window, looking on the River Thames. In an instant the surface of the river was covered with an incredible number of swallows, which remained flying, some near the water, and others at a considerable height above, till the rain had ceased, when not one of them was to be seen. I have also observed nearly a similar circumstance on the roof of the Tennis Court, at Hampton Court. A vast flight of swallows have alighted upon it, and after remaining there for a few hours, have entirely disappeared. Sometimes they assemble and roost on the willows which overhang the banks

of the aytes in the Thames, and I have also seen them settle in prodigious numbers on the turf on Molesey Hurst. Our assemblages of birds, however, are nothing when compared with the flocks of the passenger pigeon (Columba migratoria) of America. Audubon, in his Ornithological Biography, gives a curious and interesting account of the flight of these birds. He says that in passing over the Barrens, a few miles from Hardensburgh, he observed the pigeons flying from north-east to south-west, in greater numbers than he had ever seen them before; and feeling an inclination to count the flocks that might pass within the reach of his eye in one hour, he seated himself on an eminence, and began to mark with his pencil, making a dot for every flock that passed. In a short time finding the task impracticable, as the birds poured in in countless multitudes, he rose, and counting the dots already put down, found that one hundred and sixty-three had been made in twenty-one minutes. He then travelled on, and still met more as he proceeded. The air was literally filled with pigeons; the light of noon-day was obscured by an eclipse, the dung fell in spots not unlike melting flakes of snow, and the continued buzz of wings had a tendency to lull his senses to repose. Whilst waiting for his dinner, immense legions were still going by, and on Mr. Audubon's arrival before sunset at Louisville, distant from Hardensburgh fifty-five miles, the pigeons were still passing in undiminished numbers, and continued to do so for three days in succession.

Mr. Audubon makes the following curious estimate of the number of pigeons contained in *one only* of these mighty flocks. Taking a column of one mile in breadth, which he thinks is far below the average size, and supposing it to pass over without interruption for three hours, at the rate of one mile in a minute, it will give us a parallelogram of one hundred and eighty miles by one, covering one hundred and eighty square miles. 'Allowing two pigeons to the square yard, we have one billion, one hundred and fifteen millions, one hundred and thirty-six thousand pigeons in one flock. As each pigeon daily consumes fully half a pint of food, the quantity necessary for supplying this vast multitude must be eight millions, seven hundred and twelve thousand bushels a day. Nor is the account of their roosting places less curious. One of them on the banks of the Green River in Kentucky was repeatedly visited by Mr. Audubon. It was in a portion of the forest where the trees were of great magnitude, and where there was little underwood, and the average breadth was about three miles. On arriving there about two hours before sunset, few pigeons were to be seen. A great number of persons, however, with horses and waggons, guns and ammunition, had already established themselves on the borders. Two farmers had driven upwards of three hundred hogs from their residence, more than a hundred miles distant, to be fattened on the pigeons which were to be slaughtered. The sun had set, yet not a pigeon had arrived. Every thing, however, was ready, and all eyes were gazing on the

clear sky, which appeared in glimpses amidst the tall trees. Suddenly there burst forth a general cry of "Here they come." The noise which they made, though yet distant, is described as like a hard gale at sea passing through the rigging of a close-reefed vessel. As the birds arrived, they were knocked down by thousands by the pole-men. As they continued to pour in, the fires were lighted, and a magnificent, as well as wonderful sight presented itself. The pigeons, arriving by myriads, alighted everywhere, one above another, until solid masses as large as hogsheads, were formed on the branches all round. Here and there the perches gave way under the weight, with a crash, and falling to the ground, destroyed hundreds of the birds beneath, forcing down the dense groups with which every stick was loaded. The pigeons kept constantly coming, and it was past midnight before a decrease in the number of those that arrived could be perceived. The noise made was so great, that it was distinctly heard at three miles from the spot. Towards the approach of the day the noise in some measure subsided, and long before objects were distinguishable, the pigeons began to move off in a direction quite different from that in which they had arrived the evening before, and at sunrise all that were able to fly had disappeared.

'———— And well-shower'd earth
'Is deep enrich'd with vegetable life.'—THOMSON.

FEW things appear to me more curious than the fact, that the seeds of various plants and flowers, which have lain dormant in the ground through a succession of ages, have, either by being exposed to the air, been enabled to vegetate, or have been brought into action by the application of some compost, or manure agreeable to their nature.

This was shown in trenching for a plantation a part of Bushy Park, which had probably been undisturbed by the spade or plough since, and perhaps long before, the reign of Charles I. The ground was turned up in the winter, and in the following summer it was covered with a profusion of the tree mignionette, pansies, and the wild raspberry, plants which are nowhere found in a wild state in the neighbourhood; and in a plantation recently made in Richmond Park, a great quantity of the foxglove came up after some deep trenching. I observed a few years ago the same occurrence in a plantation in Devonshire, the surface of which was covered with the dark blue columbine,* a flower produced in our gardens by cultivation, and I believe not known in this country

* I have since learnt that the columbine is found wild in the western counties.

in its wild state. A field also, which had previously little or no Dutch clover upon it, was covered with it after it had been much trampled upon, and fed down by horses; and it is stated from good authority, that if a pine forest in America were to be cut down, and the ground cultivated, and afterwards allowed to return to a state of nature, it would produce plants quite different from those by which it had been previously occupied.* So completely indeed is the ground impregnated with seeds, that if earth is brought to the surface, from the lowest depth at which it is found, some vegetable matter will spring from it. I have always considered this fact as one of the many surprising instances of the power and bounty of Almighty God, who has thus literally filled the earth with his goodness, by storing up a deposit of useful seeds in its depths, where they must have lain through a succession of ages, only requiring the

* The *Hypecoum procumbens* was lost in the Upsal garden for forty years, but was accidentally resuscitated by digging the ground it had formerly occupied. A species of *Lobelia*, which had been missing for twenty years in the Amsterdam garden, was unexpectedly recovered in the same manner. There is a very curious account in Monson's Preludia Botanica, of the appearance of a species of mustard, *Sisymbrium Iris*, after the fire of London, and another species, *Sisymbrium Panonicum*, made its appearance suddenly among the ruins, after the fire of Moscow, and continues abundant there ever since. A gentleman tells me that he saw a crop of barley where oats had been sown, in Glamorganshire, and the farmer assured him that the ground had not been stirred before for thirty years. A similar circumstance occurred in Scotland.

energies of man to bring them into action. In boring for water lately at a spot near Kingston-on-Thames, some earth was brought up from a depth of three hundred and sixty feet; this earth was carefully covered over with a hand glass, to prevent the possibility of any other seeds being deposited upon it, yet in a short time, plants vegetated from it. If quick lime be put upon land which from time immemorial has produced nothing but heather, the heather will be killed, and white clover spring up in its place.*

A curious fact was communicated to me, respecting some land which surrounds an old castle, formerly belonging to the Regent Murray, near Moffatt. On removing the peat, which is about six or eight inches in thickness, a stratum of soil appears, which is supposed to have been a cultivated garden in the time of the Regent, and from which a variety of flowers and plants spring, some of them little known even at this time in Scotland.

The care which is taken to supply the ground with those seeds which, from probably being of a farinaceous nature, would not preserve their vital powers through a succession of ages, as other seeds do, is very curious. Many of them are deposited by crows and other birds and animals. The Rev. Mr. Robin-

* The *Didymodon flexifolium* used to be found most sparingly by the keenest muscologists. Dr. Greville found a patch of it where heath had been burnt in Devonshire, and since that it has been found in several places in Scotland and elsewhere, in similar situations.

son, in his Natural History of Westmoreland and Cumberland, says that 'birds are natural planters of 'all sorts of trees, disseminating the kernels upon 'the earth, till they grow up to their natural strength 'and perfection.' He tells us that early one morning he observed 'a great number of rooks very busy 'at their work, upon a declining ground of a mossy 'surface, and that he went out of his way on pur-'pose to view their labour. He then found that they 'were planting a grove of oaks.* The manner of 'their planting was thus. They first made little 'holes in the earth with their bills, going about and 'about till the hole was deep enough, and then they 'dropped in the acorn, and covered it with earth and 'moss.' 'The young plantation,' Mr. Robinson adds, 'is now growing up to a thick grove of oaks, fit 'for use, and of height for the rooks to build their 'nests in. On telling the circumstance to the owner 'of the ground, who observed the acorns to spring 'up, he took care to secure their growth and rising. 'The season was the latter end of autumn, when all 'seeds are fully ripe.'

Mr. Edwards observes that even the droughts of the autumn continue to increase and propagate seeds and plants: for, by causing deep chinks or chaps in the earth, the seeds of trees and larger plants that require depth are lodged at proper depths for their growth, and at the same time secured from such animals as feed on them.

* I have observed in another place that rooks probably bury seeds for the purpose of feeding upon them in the winter.

Mice also bury a great number of seeds for their winter store, many of which vegetate:

> sæpè exiguus mus
> Sub terris posuitque domos, atque horrea fecit—

and some seeds are provided with a sort of down, by which they are carried, with the help of the wind, to great distances; and others fix themselves on the ground by means of a glutinous substance attached to them.

It is a curious fact, in proof of what has been advanced, that more recent deposits of earth, such as peat, leaf-mould, &c., produce little or no vegetable substances, while, as has been shown, soil from whatever depth it is brought, is impregnated with seeds, which grow freely on being exposed to the influence of light and air.

The coral reefs in the South Seas are first of all covered with marine substances—then with the excrements of birds, in which are undigested seeds that spring up and flourish in the deposits which have been formed on the reefs. So various are the ways in which a beneficent Providence has enabled the earth to produce food for the benefit of his creatures, making an insignificant insect, and perhaps a small migrating bird, instruments by which he shows his power and goodness.

Many plants show a great fondness for particular spots, and it is not easy to eradicate them from it. In looking over an old History of Middlesex, I found mention made of a very small mountain pink, which

had been discovered on a mound of earth which was pointed out in Hampton-Court Park. I went to the place at the time of the year when those plants are in flower, and readily discovered this pretty pink. Not one plant however could I find away from the mound, though I have repeatedly looked for them, nor are there any of the same variety growing wild in the neighbourhood.

The influence which particular soils have on the colours of flowers is very curious. Whoever has attended to the growth of the better sort of tulips knows that by planting them in too rich a soil the colours will—what florists call—*run;* and others, which have remained of one colour in some particular soil, will, on being removed to another, break into a variety of colours. If a common wild primrose is taken up, and the root separated, and planted in another soil, the blossom loses its brilliant yellow hue, and becomes of a pale brown or light chocolate colour.

The tendency observed in plants to follow light, which is so necessary for them, makes them display real motion.* The following exemplification of this tendency is taken from the Memoirs of the American Academy of Arts and Sciences at Boston.

In the spring a potato was left behind in a cellar where some roots had been kept during the winter, and which had only a small aperture of light at the upper part of one of its sides. The potato, which lay in the opposite corner of this aperture, shot out a

* Blumenbach.

runner, which first ran twenty feet along the ground, then crept up along the wall, and so through the opening by which light was admitted.

Those plants which are of the greatest importance to mankind are endowed by Providence either with the property of adapting themselves to a great variety of climates, or, when confined to any individual climate, of flourishing there in any kind of soil. This is the case with several species of grain—the potato, &c.; and the cocoa-palm vegetates vigorously in sandy and stony as well as in the richest earth.*

* Blumenbach.

——— ' All your temples strow
With laurel green and sacred mistletoe.'
GAY.

I HAVE lately heard a curious idea advanced that all mucilaginous seeds must undergo the process of passing through the stomach of birds before they will vegetate. This was applied principally, however, to the seeds of the misletoe and ivy. The former is supposed to be propagated by birds, but I cannot think that this is the case, since a young misletoe may be frequently seen forcing its way out of a hawthorn, where the bark is perfectly smooth; and from a place least likely to have a seed dropped upon it by a bird, namely the underside. Five or six of these embryo plants may be seen in a straight line near each other, peeping out of bark which had no crack whatever in it. These primary eruptions from the bark may be compared to a pustule on the skin. As they increase in size a pair of leaves appear, which are soon followed by others, and in the first season the growth of the plant will vary from two to three inches. The leaves always come out in pairs. The roots or whatever they may be called insinuate themselves between the rind and the wood of the tree, being that part which is called the *alburnum*, and run into it in a way which I can only compare to the worsted introduced into a stocking in darning it. As

the mistletoe becomes older, all that might be considered as forming the root in its earlier stages disappears. The variation in colour in the now blended wood (according to the respective varieties of the parent stock) being the only distinguishing mark of the former place and existence of the root. Its adhesion now presents the same appearance as that of a graff, the union of the scion and stock being perfect.

The first introduction, and the subsequent growth of this parasitical plant, are wrapt at present in much mystery. Many persons suppose that birds are natural planters of the mistletoe, by rubbing or cleaning their beaks, after they have been partaking of its mucilaginous seeds, against the branch of a tree. There is one circumstance which might tend to confirm this supposition; which is the fact that the missel thrush, or thrice cock as I have heard it called in Staffordshire (Turdus viscivorus) is found in great numbers in Herefordshire and Monmouthshire where mistletoe abounds. It migrates thither in flocks, with the field-fare every winter. In Wiltshire, mistletoe is less abundant, and that species of thrush is not so numerous; while in Devonshire both the plant and the bird are rarely to be seen, yet both these latter counties are cider counties, abounding in apple-trees, the mistletoe's favourite stock. It is however found on the lime trees in the avenues of Hampton Court and Bushy Park, and also on the hawthorn and the oak. Mistletoe, that is found in the former tree, is prized by farmers as a supposed cure for some diseases in their cattle.

Various attempts have been made by persons with whom I am acquainted to propagate the mistletoe, by depositing the seed between the forks of trees, and by inserting it in the bark, but the attempt has hitherto failed as far as I can speak from my own observation. The seeds also of the ivy seldom grow though planted with the greatest care, even under walls; yet if dropped by birds either upon or even in the crevices of walls, they will grow spontaneously and thrive luxuriantly. It is this circumstance which has led a friend of mine to suppose, and with some reason, that the seeds of the mistletoe and ivy must undergo some process, favourable to their germination, in passing through the stomach of birds.

What I have said in my 'Gleanings' of seeds lying dormant in the ground through a succession of ages has been confirmed in several instances.* A portion

* In still further confirmation of this fact, it had long been observed, that in some meadows at Kingston upon Thames, contiguous to the Middle Mill in that Town, there had constantly appeared in these grounds for the last thirty years, a vast quantity of young and very small tendril shoots having all the appearance and characteristics of the vine in miniature.

This fact excited the notice and attention of my friend Dr. W. R. who at first was greatly disposed to attribute their existence to the probability of the fields having been in former ages, the site of the vineyards, so well and generally known to have abounded in the neighbourhood of every town and place of repute in this country, and whose climate appears to have undergone so great a change in these latter days; this opinion was still strengthened for a time, by my friend taking up one

of a marshy meadow in Herefordshire, produced the beautiful white silky rush, called I believe the cotton grass (eriophorum angustifolium), and in so great abundance, that, seen at a distance, it resembled a partial fall of snow. The proprietor caused that portion to be deeply trenched and drained, spreading the soil from the drains over the contiguous ground. The ensuing autumn instead of a white, a blue surface was presented, the whole space being adorned with the wild campanula (campanula rotundifolia) not one of which previously grew near the spot, and the beautiful rush disappeared. The tree mignionette (reseda luteola) grows abundantly near Dudley Castle in soil thrown up from a great depth among the lime rocks. This plant also, as well as colt's foot, soon covers the coal-pit banks in that part of the country,* the soil

of the tendrils and carefully planting it in a good soil against a wall of genial aspect, and rearing a flourishing vine bearing the true *Claret grape* with its deep red juice, so little cultivated or adapted to the present state of our colder clime. On prosecuting, however, this interesting enquiry, it was ultimately discovered that the owner of these lands had for a number of years been in the constant habit of making *Raisin wine*, and that after the usual fermenting process of the fruit had been brought to a termination, the husks, SEEDS, and stalks, were thrown en masse upon the dung-heap, which at length found its way as a coating of manure to the fields in question; thus depositing the germ of these foreign vines, whose vital principles had not been destroyed by the several stages they had undergone, not even by that last and most fearful action, the process of fermentation.

* While I am referring to the Staffordshire coal-pits, I may mention, in confirmation of what I have said in another place

being brought from 100 to 150 yards below the surface, the white Dutch clover being found mixed amongst them. When we thus find in plants a vital power which enables them to vegetate after having been buried for numerous ages, and which proves that they are imperishable, 'why,' with respect to the far nobler work of creation, ***man***, 'should it be 'thought a thing incredible that God should raise 'the dead?'

of live eels being found in a block of coal, the following fact communicated to me by a most respectable clergyman and magistrate in that neighbourhood. He informed me that two colliers came before him and requested to make an affidavit of their having discovered in a large block of coal, about 60 yards below the surface of the earth, a snake or adder, which was found alive on breaking the piece of coal. The men wished to make the affidavit, because the truth of their assertion had been doubted.

'The twigs of the common wild-rose often shoot out into a 'beautiful tuft of numerous reddish moss-like fibres, wholly 'dissimilar from the leaves of the plant, deemed by old na-'turalists a very valuable medical substance, to which they 'gave the name of bedeguar.'—KIRBY and SPENCE.

I HAVE often admired a small, round, mossy substance attached to a branch of the dog-rose growing in our hedges, and which I was unable to account for until the following circumstance was related to me by that ingenious florist and nurseryman in the King's-road (Mr. Knight), one to whom every admirer of rare and beautiful plants is much indebted, and by whose exertions and skill a new *rhododendron arborea* is at this time (April) in splendid bloom, and without a rival, I believe, in this country.

Mr. Knight informed me that, having been requested by one of his customers to endeavour to preserve a favourite mulberry-tree, which for many years had flourished on her lawn, but which, with the exception of one very large branch, was either dead or decaying, he waited till the sap had ascended, and then barked the branch completely round near its junction with the trunk of the tree. Having filled three sacks with mould, he tied them round that part of the branch which had been barked, and by means of one or two old watering-pots, which were kept filled with water, and placed over the sacks, from

which the water gradually distilled, the mould in the sacks was sufficiently moistened for his purpose. Towards the end of the year he examined the sacks, and found them filled with numerous small fibrous roots, which the sap, having no longer the bark for its conductor into the main roots of the tree, had thus expended itself in throwing out. A hole having been prepared near the spot, the branch was sawn off below the sacks, and planted with them, the branch being propped securely. The next summer it flourished and bore fruit, and is still in a thriving state.

Having heard this fact, I examined the mossy substance on the dog-rose, and found that, in consequence of the bark on the branch on which it was found having been removed by some insect, the sap in receding had thrown out roots, which from exposure to the air, produced the mossy ball in question, and which was probably made the nest or hybernaculum of some insect.* This idea might be followed up practically in this country, as I have lately heard it is in China; and the more uncertain method of grafting or budding to increase our stock of plants might be abandoned for the method above mentioned.

* If this mossy substance be examined, the larvæ of an insect will be found belonging to the genus *cynips*. Another species produces the gall-nut; and the birch-tree is subject to a disease, like that in the dog-rose perhaps, and occasioned probably by an insect. The gall-nuts however are very sportive.

'Preach as I please, I doubt our curious men
'Will choose a pheasant still before a hen.'—Horace.

One of the keepers in Richmond Park informs me that he has often heard his father, who was also a keeper, mention that, in the reign of George the Second, a large flock of wild turkies, consisting of not less than three thousand, was regularly kept up as part of the stock of the park. In the autumn and winter they fed on acorns, of which they must have had an abundant supply, since the park was then almost entirely wooded with oak, with a thick cover of furze; and although at present eleven miles in circumference, it was formerly much larger, and connected with extensive possessions of the Crown, some of which are now alienated. Stacks of barley were also put up in different places in the park for their support; and some of the old turkey cocks are said to have weighed from twenty-five to thirty pounds. They were hunted with dogs, and made to take refuge in a tree, where they were frequently shot by George the Second. I have not been able to learn how long they had been preserved in the park before his reign, but they were totally destroyed towards the latter end of it, in consequence of the dangers to which the keepers were exposed in protecting them

from poachers, with whom they had many bloody fights, being frequently overpowered by them.

Though I have not been able, in any of the accounts which have been given of Richmond Park, to find a notice of the stock of turkies, there can, I think, be no doubt of the fact, since the ancestors of the present head and second keepers of the park had, for many generations, been keepers in it, and have handed down to their present successors many curious accounts of the fights which took place between them and the poachers, in the preservation of the turkies.

That turkies would increase rapidly in the park if left to themselves, there can be no doubt, as a stray hen turkey brought up a large brood, which I saw, and which were quite wild. They kept in a part of the park little frequented, and if disturbed, would take a flight and settle in trees: they were subsequently shot, and were in good condition. Had these birds been suffered to remain, they would probably have increased rapidly.

In one of the woods at Aston Hall, in Warwickshire, I saw, some years ago, both pea and Guinea fowl, in the same wild state. The common domestic fowl would, if properly encouraged, become an inhabitant of our woods, and their flesh approach to the flavour of the pheasant. In Windsor Great Park the experiment was tried, and perfectly succeeded, the fowls requiring no more care or feeding than the pheasant. I was assured that these wild fowls were remarkably fine. and partook very much of the flavour of the pheasant.

The only wild turkies* which I can at present hear of, are to be found in the park of Sir Watkin Williams Wynne, at Wynnstay, where there is a flock consisting of about five hundred. They were tried in Windsor Great Park, but did not succeed there. A few bustards are still to be found near Newmarket; but I believe they have quite deserted Salisbury Plain.

The peewit is much attached to its old haunts. A large plantation was made in a part of Richmond Park, where these birds had for many years been in the habit of breeding. They continued to do so until the young plants had attained a sufficient height and thickness to exclude them from the ground. They have since continued to lay their eggs near the same spot.

The Cape geese, which are kept in the large ponds in the same park, used to have their nests on the island in one of those ponds. In consequence, however, of their eggs having been frequently destroyed by the rats, they took to building in some oak pollards, near the water, from whence they conveyed their young in safety. I have questioned the keepers as to their mode of doing this. Their opinion is, that the old birds get the young under their wings, and then descend the tree. It is more probable, however, that they carry them one by one in their mouths. I knew an instance of a wild duck, who

* I have since heard that there is a breed of wild turkies in a park belonging to Lord Ducie, in Gloucestershire.

had its nest in a poplar tree, which overhung a piece of water, in Staffordshire, and who contrived to convey its young with safety to the water.

The history of wild ducks is curious. In consequence of the drainage of the Lincolnshire fens, the quantity which visit them is much diminished, and many of the decoys are abandoned. In 1765, an extraordinary flood prevailed, when most of the Lincolnshire fens were inundated. The decoy at Heckington, near Sleaford, was that year visited by incredible quantities of ducks, the average take of the season being 400 dozen or 4800 a week. They appear to quit this country in the spring, and to return about the time of harvest, although some breed in low and retired situations, and occasionally in meadows. These birds, however, would appear to have different habits from those which emigrate. If the eggs of a wild duck are placed under a common duck, the young when hatched immediately exhibit the perfectly wild nature of their origin, and hide themselves with wonderful cunning. If old ones are caught and pinioned, they are, I believe, never known to breed. In the *tidal* waters of the estuaries of the Lincolnshire coast, they are shot in hard weather by men who approach them lying flat in small boats called "*gunning shouts,*" carrying very large duck-guns. The charge is a pound, or a pound and a half of shot. One man was known to kill £200. worth of ducks in one season.

'Black from the stroke above, the smould'ring oak
'Stands a sad shatter'd trunk.'—Thomson.

I lately witnessed a curious instance of the effect of lightning on a fine large thriving oak tree in Richmond Park. Soon after the tree had been struck by the lightning, I went to examine it, and found that all the main branches had been carried away, one large limb being sixty paces from the tree. The tree itself, which might have contained from two to three loads of timber, was split in two, and every atom of bark so completely stripped from it, that on removing the turf which surrounded the butt of the tree, the bark had disappeared even below the surface of the ground. Not one of the small shoots or branches could be found, but the ground was strewed with a quantity of black, brittle substance which pulverized in the hand on being taken up. The tree was standing near some others which were uninjured. A person who was near the spot at the time, informed me that the noise and crash were tremendous, and that the destruction of the tree was instantaneous. When one considers that though some of the large limbs were found, yet that others, many of them as thick or thicker than a man's leg, had totally disappeared, and had probably been crushed into powder, some idea may, perhaps, be formed of the effect produced by lightning.

While on the subject of trees, I will notice the present state of the old thorns in Bushy Park, from which it probably takes its name. These trees are generally supposed to have been in existence at the time of Oliver Cromwell (the park being then used as a hare park.) As they increase in age, they have the property of separating themselves into different stems, some having four or five and even six, which, as they separate, become regularly barked round, forming to appearance so many distinct trees closely planted together, except that they all meet at the butt of the tree thus:—



Some of the thorns are now undergoing the process of separation, having already thrown out one stem, while in other parts they are deeply indented with seams down the whole stem. These gradually deepening from opposite sides towards the centre, will at last split the tree into a number of separate stems which are barked round. In other trees the seam is hardly visible, though none of them are without it. This peculiarity seems confined to the thorn, and as I have not observed it in those which appear to have been more recently planted, it is probably the effect

of great age, though the trees are still flourishing, and I know of few sights more beautiful than the fine old thorns in Bushy Park in full blossom. The yew tree, I have observed, is sometimes strongly marked with seams, especially those which have arrived at a great age, but I have not seen any in which the separation has actually taken place.

This remarkable property in the thorn is not noticed, as far as I remember, in any work I have met with. It seems, however, to be worthy of some attention, and might be the means of throwing light on the age of those trees.

There are two elm trees, or rather the remains of two, in Hampton Court Park, known by the name of the 'Giants,' which must have been of an enormous size, the trunk of one of them measuring twenty-eight feet in circumference. The only one I have met with of a larger size is by the side of the road at Crawley in Sussex, in the interior of which a party of five or six persons are stated to have dined, and from its external appearance I can easily believe this. Some one has placed a door in its side, and to the credit of the inhabitants of the village, it seems to be treated with the care and respect to which its venerable appearance entitles it. Perhaps the largest oak-tree in England is to be seen near the old stables in Hampton Court Park. It is thirty-three feet round, and its diameter, therefore, eleven feet. I never see this beautiful tree, (and I often go to admire it,) without carrying my mind back to the time it was probably planted, and the ages which have since elapsed. The

venerable old pollards, which were so sadly cut down on the enclosure of Windsor Forest, might have been thought to have sprung from and not to have been coeval with it.

There is also a remarkably fine poplar tree in the stud-house grounds in the same park. The height of this tree is ninety-seven feet; and to look at it one might almost suppose that it was composed of several trees, so mighty are the branches which have shot up from the main trunk, within a short distance from the ground. This tree is fourteen feet in circumference, and near it is a thriving English elm, so called to distinguish it from the wych elm. There are seven hundred and ninety-six feet of solid timber in this tree. The trunk is forty-four feet in height, and eighteen feet in circumference. There is another elm near it, known by the name of King Charles's Swing, which has a most curious appearance. There are two enormous limbs growing from each side of the trunk, which at a height of eight feet six inches from the ground, measures thirty-eight feet round. Each of the limbs are about forty feet high, and are so healthy that they seem likely to become stupendous trees.

I always regret seeing the wych elm planted instead of the English. This latter is more expensive, as it is obliged to be propagated either by layers or by grafting it on the wych elm. In a work called an Appendix to New Improvements and Planting, &c. by R. Bradley, Professor of Botany in Cambridge, published in 1726, there is the following passage—

'The elm, according to the forest terms, is not a 'timber tree, but is styled by the foresters, a weed.'

This seems to be a confirmation of the opinion that it is not indigenous, but is an intruder. That it is an exotic, I think is proved by the custom of nurserymen grafting it on the wych elm, which they would not do, could they raise it from seed. Very few old elm trees are found in the royal forests.

Cork trees flourish in Hampton Court Park, where there are two large ones. There are also some ilexes, or evergreen oaks, in Bushy Park, of a very large size, and apparently as hardy as any other tree there. The avenues in that park are perhaps the finest in Europe. There are nine of them altogether, the centre one, formed by two rows of horse-chestnut trees, being the widest. The side avenues, of which there are four on each side of the main avenue, are of lime trees, and the whole length, including the circuit round the Diana water, is one mile and forty yards. The trees are generally in a healthy and thriving state, and when the horse-chesnuts are in full bloom, the appearance of the avenue is most beautiful. The fine fountain in the centre of the circular piece of water in the avenue does not appear to have excited as much attention as it deserves. The small figures and shells are of bronze. The upper part of the fountain is composed of the finest statuary marble, and the figure of Diana on the top, which is seven feet in height, is cast in bronze. The attitude, proportions, and elegance of this figure, cannot be sufficiently admired. The pipes which conveyed

the water to play from this fountain, have long since been destroyed, and it is a matter of regret that they have not been replaced.

Near the Queen's house in this park is a very fine Spanish chestnut-tree, said to have been planted by Charles II., and to have been the first which was seen in this country.

The trees in Richmond Park are almost entirely oaks, and some of them of very large dimensions. Many of them however are pollards, in consequence of a custom which formerly prevailed very generally of lopping trees for browse for the deer. Two of the trees are called the 'King and Queen,' and are of very large size. The timber from the trees in this park is generally of a bad quality, probably from the wetness of the soil. It is now however drained.

The trees which at present form so much of the beauty of Greenwich Park were planted by Evelyn, and if he could now see them he would call them 'goodly trees,' at least some of them. The chestnuts, however, though they produce some fine fruit, have not thriven in the same proportion with the elms. In noticing this park I should not forget to mention that the only remaining part of the palace of Henry VIII. is preserved in the front of Lord Auckland's house looking into the park. It is a circular delft window of beautiful workmanship, and in a fine state of preservation. There are also a great number of small tumuli in the upper part of the park, all of which appear to have been opened.

Last year a certain portion of the turf in the park

became suddenly brown, and the grass withered and died. On turning up the turf, an amazing number of the grubs of the long-legged gnat (*tibula oleracea*) were found, and which had evidently fed on the roots of the grass, as they were eaten off. This shows the correctness of what an intelligent writer, Mr. Stickney, has said in his treatise upon this insect, when he gave it as his opinion that the grub fed on the roots of corn and grass. It is generally been supposed that this grub is most destructive in marshy lands, but the devastation in Greenwich Park was on the high ground near the Observatory, on a bed of gravel. On mentioning the circumstance to one of the governors of Greenwich Hospital, he informed me that a part of one of the estates belonging to the hospital in the north of England had been visited by an army of these destructive insects, who carried on their depredations in a regular line till they came to a river, which stopped their further progress. The mischief done by them in Greenwich Park was stopped by sprinkling salt on the grass, and afterwards dressing it with a slight coat of soil, and sowing grass-seeds upon it. In a note in Messrs. Kirby and Spence's Entomology it is stated that two species of these insects are confounded under the appellation of the *grub*,—the larvæ, namely, of *tibula oleracea* and *cornicina*, which last is very injurious, though not equally with the first. In the rich district of Sunk Island in Holderness, in the spring of 1813, hundreds of acres of pasture have been entirely destroyed by them, being ren-

dered as completely brown as if they had suffered a three months' drought, and destitute of all vegetation, except that of a few thistles. A square foot of the dead turf being dug up, two hundred and ten grubs were counted in it!—and, what furnishes a striking proof of the prolific powers of these insects, the next year it was difficult to find a single one.

In the grounds of the lodge belonging to the Earl of Errol in Richmond Park there is a raised piece of ground known by the name of Harry the Eighth's Mound. It is supposed that he stood on this elevated spot to watch the signal from the Tower of London, which assured him of the death of Anne Boleyn. It is in a direct line with the Tower, which is readily seen with the naked eye on a clear day. The beauty of the grounds at this charming lodge with reference to their extent, is exceeded by few in this kingdom.

The upper lodge in Bushy Park is also very agreeably situated. It was formerly the Ranger's lodge, and in the time of Oliver Cromwell was inhabited by Bradshaw the regicide. Charles II. gave it to a gentleman of the name of Podger, who had shown his loyalty during the troubles of the Commonwealth; and he afterwards partook of an entertainment from him at the lodge. On taking down lately the old church at Hampton, Podger's tomb was discovered under the reading-desk. It is now put up in the new church. The original lodge has long since been pulled down, but there is a painting of it preserved in the neighbourhood.

The footpath from Hampton Wick across Bushy Park to Teddington is particularly pleasant and healthy. A former ranger of the park (Lord Halifax, I believe) attempted to stop this path. A patriotic shoemaker, however, who had long enjoyed an agreeable walk amongst the thorn trees, thought that he could not do better with the money which he had scraped together than leave it to be spent in recovering the right of way for the benefit of his neighbours. The money was accordingly so spent, and the right of way established. Some of the cottagers in the neighbourhood have portraits of this public-spirited cobbler, with an account affixed of the above-mentioned circumstances.

Among the records preserved by the Steward of the Manor of Hampton, is a strong remonstrance from the inhabitants of that place to Oliver Cromwell, complaining of his having encroached upon their rights by adding a part of their common to Bushy Park. This remonstrance seems to have had its effect, as a grant of some land in the neighbourhood was made to them in lieu of what had been taken from them. The ancient boundaries of Bushy Park are found in several places.

In Hampton-Court Park may be traced some lines of fortification which were thrown up to teach that art to the Duke of Cumberland, when a boy, and whose name was afterwards so much connected with the troubles of 1745. There is also an unfinished canal, which was begun by William the Third, and intended to correspond with the one in front of

Hampton-Court Palace. The spot is still shown where the king's horse slipped, and occasioned his death.

Hampton-Court Palace is supplied with water from some springs in Coombe Wood. The distance is two miles, in the most direct line, and the leaden pipes which convey the water are carried across the bottom of the river Thames. There are two pipes from each conduit, making altogether eight miles of leaden pipes. These pipes were laid down by Cardinal Wolsey, for the purpose of supplying his palace with water. A foot of this old lead weighs twenty-four pounds; and allowing one pound for waste in each foot since the time of Cardinal Wolsey, each pipe must have weighed 132,000 pounds, and the eight, therefore, 1,056,000 pounds. This alone is a proof of the amazing wealth and resources of Wolsey. His palace is supposed to have been very considerably larger than the present one, the roof of which is covered with lead, which probably was by no means as plentiful in those days as it is at present.

"——— 'Tis often seen
Adoption strives with nature."—SHAKSPEARE.

ANIMALS which are unable to associate with their own species will sometimes form most strange attachments. I had last year a solitary pigeon, who, being unable to procure a mate, attached itself to an old barn door fowl, whose side it seldom left at night, roosting by him in the hen-house. The cock seemed sensible of the attachment of the pigeon, and never molested it, or drove it from him. I had also a tame hedge-hog, which nestled before the fire on the stomach of an old lazy terrier dog, who was much attached to it, and the best understanding existed between them. I have also seen a horse and a pig associate together, for want of any other companions; and Mr. White, in his Natural History of Selborne, mentions a curious fact of a horse and a solitary hen spending much of their time together in an orchard, where they saw no creature but each other. The fowl would approach the quadruped with notes of complacency, rubbing itself gently against his legs; while the horse would look down with satisfaction, and move with the greatest caution and circumspection, lest he should trample on his diminutive companion.

At Aston Hall, in Warwickshire, I remember to have seen a cat and a large fierce bloodhound, who

were always together, the cat following the dog about the yard, and never seeming tired of his society. They fed together, and slept in the same kennel.

A gentleman residing in Northumberland assured me that he had a tame fox, which was so much attached to his harriers, and they to him, that they lived together, and that the fox always went out hunting with the pack. This fox was never tied up, and was as tame, playful, and harmless as any dog could be. He hunted with the pack for four years, and was at last killed by an accident.

But a most singular instance of attachment between two animals, whose natures and habits were most opposite, was related to me by a person on whose veracity I can place the greatest reliance. Before he took up his abode at Hampton Court, he had resided for nine years in the American States, where he superintended the execution of some extensive works for the American Government. One of these works consisted in the erection of a beacon in a swamp in one of the rivers, where he caught a young alligator. This animal he made so perfectly tame, that it followed him about the house like a dog, scrambling up the stairs after him, and showing much affection and docility. Its great favourite, however, was a cat, and the friendship was mutual. When the cat was reposing herself before the fire (this was at New York) the alligator would lay himself down, place his head upon the cat, and in this attitude go to sleep. If the cat was absent, the alligator was restless; but he always appeared happy when the cat was near

him. The only instance in which he showed any ferocity was in attacking a fox, which was tied up in the yard. Probably, however, the fox resented some playful advances which the other had made, and thus called forth the anger of the alligator. In attacking the fox, he did not make use of his mouth, but beat him with so much severity with his tail, that had not the chain which confined the fox broken, he would probably have killed him. The alligator was fed on raw flesh, and sometimes with milk, for which he showed a great fondness. In cold weather he was shut up in a box, with wool in it; but having been forgotten one frosty night, he was found dead in the morning. This is not, I believe, a solitary instance of amphibia becoming tame, and showing a fondness for those who have been kind to them. Blumenbach mentions that crocodiles have been tamed; and two instances have occurred under my own observation of toads knowing their benefactors, and coming to meet them with considerable alacrity.

Colonel Montagu, in the Supplement to his Ornithological Dictionary, relates the following singular instance of an attachment which took place between a Chinese goose and a pointer which had killed the male. The dog was most severely punished for the misdemeanour, and had the dead bird tied to his neck. The solitary goose became extremely distressed for the loss of her partner and only companion; and probably having been attracted to the dog's kennel by the sight of her dead mate, she seemed determined to persecute the dog by her con-

stant attendance and continual vociferations; but after a little time a strict friendship took place between these incongruous animals. They fed out of the same trough, lived under the same roof, and in the same straw bed kept each other warm; and when the dog was taken to the field, the lamentations of the goose were incessant.

Some animals of the same species form also strong attachments for each other. This was shown in the case of two Hanoverian horses, who had long served together during the peninsular war, in the German brigade of artillery. They had assisted in drawing the same gun, and had been inseparable companions in many battles. One of them was at last killed; and after the engagement the survivor was picqueted as usual, and his food brought to him. He refused, however, to eat, and was constantly turning round his head to look for his companion, sometimes neighing as if to call him. All the care that was bestowed upon him was of no avail. He was surrounded by other horses, but he did not notice them; and he shortly afterwards died, not having once tasted food from the time his former associate was killed. A gentleman who witnessed the circumstance assured me that nothing could be more affecting than the whole demeanour of this poor horse.

——— 'Where the bee
'Strays diligent, and with th' extracted balm
'Of fragrant woodbine loads his little thigh.'—THOMSON.

I HAVE some experiment-hives which enable me very accurately to inspect the operations of my bees. From the construction of the hives, the combs are necessarily built between two panes of glass, so that on drawing the sliders the two surfaces of a comb are exposed to view. In this way I am able to see almost everything that is going forward.

When the queen-bee has an inclination to deposit her eggs, she goes forth, accompanied by six or eight working bees as a guard, and whose stomachs are filled with honey. She is very deliberate in her motions, and seems to proceed with great caution. She first looks into a cell, and if she finds it perfectly empty, she draws up her long body, inserts her tail into the cell, and deposits an egg. In this way she slowly proceeds till she has dropped ten or twelve eggs, when perhaps feeling exhausted, she is fed by one of the attendant bees, who have surrounded her the whole time. This is done by the bee ejecting the honey from its stomach into the mouth of the queen. When this has been done the bee goes away, and another takes its place. The operation of laying her eggs again goes on, and is succeeded by the same mode of feeding—the attendant bees frequently

touching the antennæ of the queen with their own. When the operation of laying the eggs is completed —and it generally occupies some time—the queen retires to that part of the hive which is most filled with bees. During her progress, the surface of the comb is very little intruded upon, and the space seems purposely to be left unoccupied. Some few of the cells, however, in a brood comb, are passed over by the queen, and afterwards filled either with honey or farina. These serve as deposits of food, from which the neighbouring brood may be fed more readily, as such cells are never covered with wax.

With the hives referred to I have been able to follow many of Huber's experiments, and can bear witness to his general accuracy, except in regard to the fecundation of the queen-bee. I have bestowed much time and pains in endeavouring to discover any of the circumstances he mentions relating to this fact, but without success. Neither have I ever seen a cell visited by one of the drones *after* the egg had been deposited, which a modern writer has asserted they do. I have for many years watched my hives with the greatest care and assiduity, but have never yet seen the queen-bee leave the hive, except at the time of swarming. I have also spoken to several experienced bee-masters on the subject, and they are of the same opinion with myself—that she never quits it. Her person is so easily distinguished from the other bees, by any one at all conversant with them, that if the queen absented herself from the hive, in the way Huber describes her as doing, it seems next

to impossible that she should not have been perceived, either on her departure from, or on her return to, the hive. And yet we have no English writer on bees (and we have many acute and observant ones) who has even hinted at the probability of the queen's leaving the hive in the manner Huber asserts that she does. It is now many years since his work was published, and no part of it is more curious or more satisfactory, if correct, than what he says on the impregnation of the queen-bee. Curiosity has in consequence been much excited, and many persons, like myself, have been anxious to ascertain the accuracy of his statements. It does not appear, however, that any one in this country has succeeded in doing this, though we have many very patient observers. Is it probable, therefore, that it should have been reserved for Huber alone to ascertain a fact which had escaped the notice of naturalists, not only for ages before, but, what is more important, for years since the publication of it in his work? It should be recollected also that Huber was blind, or nearly so, and that he was obliged to rely very much on the reports made to him by his assistant, Burnens. It is however with considerable diffidence that one would venture to doubt the accuracy of any statement of Huber's, especially when the objection turns, not upon a contradictory circumstance, but upon what myself and others *have not been able to discover.*

Wax is a secretion formed under the scales of the back of the insect, from which I have repeatedly seen it exfoliate in small flakes. A considerable degree of

heat appears to be necessary to produce this secretion, as I have always observed it most frequent in hot weather. Other writers have maintained that the wax is discharged from the abdominal rings, or segments of the bees. This may be also the case, but I have never perceived it.

The vision of bees seems very imperfect. I have frequently turned a hive, so as to make the entrance about two or three inches from its former position, and have then always found the bees at a loss to gain admittance. Indeed they seem more to *feel* their way than to see it, after they have once landed themselves on the board of their hives. Their progress through the air is always made in a direct line to the hive, and the instinct which enables them to find it, amongst forty or fifty others placed in a row, and nearly similar to each other, is very striking.

Mr. Rogers, in his 'Pleasures of Memory,' has a pretty idea on this subject;—

'The varied scents that charm'd her as she flew,'

he thinks might point out the way of her return to the hive.

Wasps appear to have a better vision than bees, though it is not easy to assign a reason for this being the case, since the construction of the eyes of both insects seem to be similar. Derham, in his Physico-theology, has observed in regard to the eye of the bee and wasp, 'that the cornea and optic nerves 'being always at one and the same distance, are 'fitted only to see distant objects, and not such as

'are very nigh, and that the eye will be found on 'examination to form a curious lattice-work of several 'thousand hexagonal lenses, each having a separate 'optic nerve ministering to it, and, therefore, to be 'considered as a distinct eye.' Wasps, however, certainly seem to alight at the entrance of their nests with more accuracy than bees. I have frequently observed this to be the case, even when the hole of a wasp's nest has been in a grass field, surrounded with long grass. They alight at it with the greatest precision, seldom or never going even half an inch either on one side or the other of it, and they do this even late in the evening.

A hive of bees which has been once much exasperated, does not soon forget the injury. This was the case with one of my hives, the bees of which never allowed me for two years to come near them while they were working, without attacking me, though a neighbouring hive would allow me to take almost any liberties with it with impunity. Indeed I had familiarized myself so much with some of my bees, that I am convinced they knew me, and they always appeared to distinguish me from strangers. By constantly standing before the mouth of the hive, and allowing vast numbers to fly about and settle upon me, and by frequently feeding them, they became so well acquainted with me, that I had much pleasure in witnessing their attachment, and the confidence they placed in me. This affection was mutual, and I always think with pleasure of the many agreeable hours I have passed in company with my

bees. Those only can judge of this, who, like myself, have witnessed their assiduity, their internal labours, their affection for their queen, and all the various modes they take in promoting the prosperity of the community. I always listen to the pleasing hum of bees with delight, and know of few sounds more soothing and agreeable.

'Then, cheerful bee, come, freely come,
'And travel round my woodbine bower!
'Delight me with thy wandering hum,
'And rouse me from my musing hour;
'Oh! try no more those tedious fields,
'Come taste the sweets my garden yields:
'The treasures of each blooming mine,
'The bud—the blossom—all are thine.'

In some papers published a few years ago in the 'Plain Englishman.' I endeavoured to point out the great cruelty of procuring honey by the suffocation of bees, and the advantage which the bee-owner would derive from contenting himself with a part only of their stores. This may be done by placing a small hive glass, or even a flowerpot, on the top of each hive in April or May. These should be of a size to hold about eight or ten pounds' weight of honey; and in a tolerably good season they will generally be filled, leaving a sufficient stock of honey for the bees to subsist upon till the following spring. I am happy to find that this method is more generally practised than it formerly was. By adopting it, the lives of thousands of these industrious insects would be saved;

the profits of the bee-owner would be much more considerable, and his stock of bees annually increased.

The summer of the year 1818, as I observed before, was unusually dry and hot, and in July flowers of almost every description had entirely disappeared. I observed that bees, in consequence of this, seldom left their hives in search of honey, though the weather, one would have thought, would have tempted them out. They seemed, indeed, to be perfectly aware that their labour would be useless. I recollect meeting with an account of a hive of bees being transported from a distant place, to a spot by the side of a mountain in Italy, where they could procure honey all the year round. Finding this to be the case, they soon gave up stocking their hive, and only went out to collect honey as they wanted it. The same observation has been made on bees taken out from this country to the West Indies, who the first year stored their hive as usual, and never afterwards, merely supplying themselves with food from day to day

'So work the honey bees:
'Creatures that, by a rule of nature, teach
'The art of order to a peopled kingdom.'
SHAKSPEARE'S HENRY IV.

The lower orders of people in this and some other places have curious superstitions respecting bees. A poor old widow once complained to me that all her stocks had died, and on enquiring the cause, she informed me that on the death of her husband a short time before, she had neglected to *tap* at each of the hives to inform the bees of the circumstance. In consequence of this omission they had been gradually getting weaker and weaker, and that now she had not one left. This may appear a solitary instance of superstition, but it is by no means the case, and I believe it will be found that very generally on the death of a cottager who has kept bees, some ceremonious observance takes place. Mr. Loudon mentions that when he was in Bedfordshire, he was informed of an old man who sang a psalm in front of some hives which were not doing well, but which he said would thrive in consequence of that ceremony. This may be a local or individual superstition, but the announcement to the bees of the death of the owner is certainly a more general one. A correspondent of Mr. Loudon's mentions, that in Norfolk, at places

where bees are kept, it is peremptory, in case of the death of any of the family to put the bees in mourning, or the consequence would be that all of them would die. The person who made the assertion mentioned a case in point, where, from the neglect of the custom, every bee in the apiary had perished. The method of putting them in mourning is by attaching a piece of black cloth to each of the hives. Another correspondent also says, that in the neighbourhood of Coventry, in the event of the death of any of the family, it is considered necessary to inform the bees of the circumstance, otherwise they will dwindle and die. The manner of communicating the intelligence to the little community, is with due form and ceremony to take the key of the house, and knock with it three times against the hive, informing the inmates, at the same time, that their master or mistress, as the case may be, is dead. A similar custom prevails in Kent, and in some places it is considered expedient to communicate any great event that may take place to these industrious insects. The use of a key seems necessary in another ceremony which takes place in regard to bees. When a swarm has quitted one of my hives, I always observe that a key is used to induce it to settle, by striking it against a frying-pan, and I should feel some regret if this good old custom was omitted. So far from letting the *ringer* think that the tinkling noise he makes is a useless one, I always encourage the practice of it, and it is one of the pleasurable sounds of the country. Often have I quitted my

room on hearing it, to enjoy the sight of my additional wealth, and to assist in securing it. The day is sure to be warm and *smiling*, and I watch the encreased accumulation of my clustering bees with infinite satisfaction. The old customs I have been mentioning, and many similar ones which are practiced by my poorer neighbours, may be laughed at, but I like them all as long as they are innocent, and consider them as adding in some degree to the interest of a country life. Could I but see our peasantry prosperous and happy, all their little superstitions, their prejudices, and their many virtues, would only serve to increase the gratification I should experience in living amongst them.

To a thinking mind, few phænomena are more striking than the clustering of bees on some bough, where they remain, in order as it were, to be ready for hiving :—

'arbore summâ
'Confluere, et lentis uvam demittere ramis.'

I observe that where a hive is fixed over a swarm, the bees will generally go into it of their own accord, uttering at the same time their satisfied hum,* and seeming to be aware of the purpose for which it was placed near them. How the queen bee is made acquainted that so convenient a place for her to retreat to is near at hand, I

* Shakspeare alludes to the 'surly hum' of bees.
HENRY IV.

know not, but so it is. Surrounded by thousands of her subjects who press around her, she makes her way through them all, and enters the hive, followed by the whole swarm. Some means of communication must have taken place, as it is quite impossible that she could herself have seen the snug retreat which had been prepared for her. Here the work of preparing future cells is instantly commenced, and I have found that although a swarm has not been able for two or three days to quit the hive after they had taken possession of it, a considerable number of cells had been nearly completed. Even as soon as the foundation of a cell has been finished, the queen-bee will sometimes deposit an egg upon it, the sides being afterwards built up. As the cells increase in number, honey and the farina of flowers are stored in them :

'The careful insect 'midst his work I view,
'Now from the flowers exhausts the fragrant dew ;
'With golden treasures loads his little thighs,
'And steers his distant journey through the skies ;
'Some against hostile drones the hive defend,
'Others with sweets the waxen cells distend ;
'Each in the toil his destin'd office bears,
'And in the little bulk a mighty soul appears.' GAY.

Nothing can be more melancholy than the appearance of bees in wet weather. Some of them I have observed to come to the mouth of the hive, as if to take a view of the passing clouds, and some of those who are tempted to quit the hive return to it with

the greatest difficulty. A sunshiny day in May is their delight, and it is then that bees seem most active and most joyous.

'Blest power of sun-shine! genial day,
'What balm, what life is in thy ray!
'To feel thee is such real bliss,
'That had the world no joy but this,
'To sit in sunshine, calm and sweet,
'It were a world too exquisite.'

LALLA ROOKH.

'Great injuries these vermin, mice and rats,
'Do in the field.'—MORTIMER'S HUSBANDRY.

AN extraordinary instance of the rapid increase of mice, and of the injury they sometimes do, occurred a few years ago in the new plantations made by order of the Crown in Dean Forest, Gloucestershire, and in the New Forest, Hampshire. Soon after the formation of these plantations, a sudden and rapid increase of mice took place in them, which threatened destruction to the whole of the young plants. Vast numbers of these were killed,—the mice having eaten through the roots of five-years' old oaks and chestnuts, generally just below the surface of the ground. Hollies also, which were five and six feet high, were barked round the bottom; and in some instances the mice had got up the tree, and were seen feeding on the bark of the upper branches. In the reports made to Government on the subject, it appeared that the roots had been eaten through wherever they obstructed the runs of the mice, but that the bark of the trees constituted their food. This was ascertained by confining a number of the mice in cages, and supplying them with the fresh roots and bark of trees, when it was found that they fed greedily on the latter, and left the roots untouched. Various plans were devised for their destruction: traps were

set, poison laid, and cats turned out, but nothing appeared to lessen their number. It was at last suggested, that if holes were dug, into which the mice might be enticed or fall, their destruction might be effected. Holes therefore were made, about twenty yards asunder, in some of the Dean Forest plantations, being about twelve in each acre of ground. These holes were from eighteen to twenty inches in depth, and two feet one way, by one and a half the other; and they were much wider at the bottom than the top, being excavated or hollowed under, so that the animal, when once in, could not easily get out again. In these holes, at least 30,000 mice were caught in the course of three or four months, that number having been counted out, and paid for by the proper officers of the forest. It was, however, calculated, that a much greater number of mice than these were taken out of the holes, after being caught, by stoats, weasels, kites, hawks, and owls, and also by crows, magpies, jays, &c. The cats also which had been turned out resorted to these holes to feed upon the mice; and in one instance, a dog was seen greedily eating them. In another, an owl had so gorged himself, that he was secured by one of the keepers. As the mice increased in number, so did the birds of prey, of which at last there were an incredible number. In addition to the quantity abovementioned, a great many mice were destroyed in traps, by poison, and by animals and birds of prey: so that in Dean Forest alone, the number of those which were killed in various ways could not be cal-

culated at much less than one hundred thousand. In New Forest, from the weekly reports of the deputy-surveyor of the forest, about the same number were destroyed, allowing the same calculation for those eaten by vermin, &c.: in addition to which, it should be mentioned that these mice were found to eat each other when their food fell short in winter. Buffon mentions this circumstance, and adds, that they not only devour the smaller of their own species, but also another description of mice, which he calls Campagnols. Putting these circumstances together, the total destruction of mice in the two forests in question would probably amount to more than two hundred thousand. This calculation is made from official weekly returns and other correspondence, and will show the enormous increase of these animals in a few months, as their depredations and destruction were equally sudden.

There were two descriptions of these mice. One of them, called by Buffon *Mulot,* is our long-tailed field-mouse, 'mus sylvaticus.' The other was a short-tailed mouse, and seems to have been the 'Campagnol' of Buffon, from the Italian 'Campagnolo,' or the 'Mulot à courte queue.'* There were about fifty of these latter taken to one of the former. The long-tailed mice had all white breasts, and the tail was about the same length as the body. One of them, caught in Haywood Enclosure, Dean Forest, was nearly as large as a weazel, and the back of its

* This short-tailed mouse is the Cervicola agrestis of Bell's Brit. Quad. page 325.

neck was beautifully mottled. These latter mice were chiefly caught on the wet greens in the forest, and the short tailed both on wet as well as dry ground.

The short-tailed mouse has a much thicker head than the long-tailed one, and its ears are very short, and almost hid in the hair. Its body is about three inches long, and the tail one inch. The upper part of the body is of a reddish brown, and the belly a deep ash colour. Their runs and nests are under the surface of the ground. They produce seven and eight, and in some instances nine young at a time.

Amongst the birds of prey which made their appearance in Dean Forest during the time the mice were in the greatest numbers, was a small white owl. None of these birds had previously been observed in the forest, but in the space of a few months several were seen, and were considered to be the most destructive of any of the winged enemies of the mice. It was stated in a letter from a gentleman residing in the forest, that under the roost of one of these owls, in an enclosure called Birchwood, there were at least fifty mice, which had passed through the owl *whole*. This assertion was repeated in some subsequent correspondence, though it is probable that the pellets which owls cast up were mistaken for mice These owls are described as smaller than the brown owl, and as having a kind of ruff round the head.

Specimens of the mice taken in Dean and the New Forest were sent to Sir Joseph Banks, with an account of their depredations. In his answer he says, 'I 'have received a liberal supply of the mischievous

'vermin. The short-tailed field-mouse of Pennant 'and the field-mouse of the same author are, I 'believe, the same as those sent; but I am not quite 'certain, because Pennant describes his field-mouse 'as having a tail longer than its body, and the breast 'of an ochre colour. But those that I received have 'their tails of the same length as the body—the 'breast white. I incline to conclude that they are 'young animals, and that the old ones will answer 'Pennant's description.

'I trust that it will be ascertained which of the 'animals is the enemy to planting that is complained 'of. The proportionate quantities of each will be 'an object also of inquiry.

'I shall be glad to receive an account of the mis-'chief the mice have done. I have not in any work 'met with an account of mice having been accused 'of barking trees, which makes the fact a valuable 'addition, not only to natural history, but useful to 'all planters, who, when they are made aware of the 'nature of the obstacles presented to them, will have 'a better chance than otherwise would be the case of 'discovering a remedy.

'In speaking of shrew-mice, Pennant tells us that 'the root of the white hellebore and staves-acre* 'mixed with meal is a certain poison for them. If 'so, it may be well to attempt by the same means to 'destroy these enemies.'

In a subsequent letter Sir Joseph Banks says. 'On 'talking over the subject of the mice with a very in-

* A kind of larkspur.

'telligent practical man, he suggested an idea that 'the evil of young plants being barked by mice may 'be much more prevalent than we suppose it to be, 'though attributed to the teeth of rabbits and hares, 'instead of mice. He mentioned a wood of mine in 'Derbyshire, where abundance of young trees were 'planted, and the whole destroyed by rabbits, as my 'steward and himself supposed. Also much mischief 'in the woods of Lord Vernon at Sudbury. In both 'these cases the trees were never barked higher than 'about six inches from the ground—as high as a 'mouse can reach; but a rabbit can as easily bark a 'tree a foot from the ground as an inch.

'The notion in my judgment is worthy of inquiry 'and verification. The officers of the forest can no 'doubt tell whether a rabbit and a hare confined 'themselves in barking to the lowest six inches, or 'reach with their teeth higher up.'

In answer to this suggestion it may be stated that there were no rabbits and very few hares in the inclosures in Dean Forest, so that the damage done to the plants could not have been occasioned by them. Besides, several of the forest woodmen and others attested that they had frequently seen the mice in the act of barking the trees, even at the height of three and four feet from the ground, having climbed up the trees to that distance.

In another letter from Sir Joseph Banks, he says, 'I have inquired far and near, and I cannot meet 'with any who has suffered by the barking of young 'trees who attributes the mischief to mice. The dis-

'covery therefore must prove advantageous to all 'planters.'

In one of the Dean Forest inclosures many old hollies had been cut down to clear the way for the plantations; and from them bushes consisting of many young shoots had grown up. Almost all of these in one month of the year (September) were observed to be in a state of greater or less decay, some quite black, some turning yellow, whilst a few still remained green. Upon inspecting them it was found that the bark had been gnawed off more or less, and more or less recently according to the gradations of decay. The mice however barked indifferently young oaks, ash, beech, hollies, and willows, and but very few of the fir tribe.

In the pits made for catching the mice, they exhausted themselves in efforts to climb up the sides, so that by far the greater number of them were taken out dead. Many were drowned where the water partly filled the holes; but so little did they dread water, that ash was seen fresh barked, the bottom of which was surrounded with water in such a way, that one of the officers of the forest asserted, in an official report, that the mouse must have been actually swimming at the time of barking it. In the same report he also mentions his belief that the weasels, at the time they are preying on mice, swallow them whole, and that what they cannot digest, as the fur, &c., they void from their mouths in balls afterwards; so that it is scarcely ever perceptible where they have eaten their prey. In one of the retreats

of a weasel ten mice were found; and another weasel was seen to run into its hole with a mouse in its mouth. It is probable however that they were brought there as food for the young. The weasel, I believe, generally sucks the blood of its prey, at least that of the larger animals.

It should be mentioned in conclusion that, in a plantation in Dean Forest, consisting of three hundred acres, not more than four or five plants were found which were not injured by the mice or indeed destroyed by them. Many of the plants bitten through were as thick as a man's arm; and the roots were gnawed so close to the stem, that some of the young trees were seen either reclining on one side, or level with the ground.

The following account will show the numbers of mice caught in the different inclosures in Dean Forest in three months, from September to January, with the number of acres, and the proportion between the long and the short-tailed mice.

	Acres.	Short-tailed Mice.	Long-tailed Mice.	Total.
Haywood Inclosure	418	12,850	8	12,858
Oiley Hill ditto	41	1,161	11	1,172
Crabtree Hill ditto	372	7,851		7,851
Park Hill ditto	113	2,665		2,665
Shutcastle ditto	163	484	33	517
Sallow Vallets ditto	386	1,361		1,361
Barnhill ditto	50		70	70
Birchwood ditto	50		3	3
Whitemead Park ditto	100	1,559	15	1,574
Total Acres, 1,693				Total Mice, 28,071

I should not forget to mention that, in New Forest, foxes were frequently seen hunting after the mice, and eating them greedily.

I was lately shown a pear-tree, trained against an out-house in the yard of a gentleman at Hampton-Court, all the upper part of which had been eaten away by rats. They descended from the projecting eaves of the building on the branches of the pear-tree; and as far as they could reach had fed on the leaves and tender shoots of the tree. They had been frequently seen in the act of feeding, and indeed the tree shows evident marks of the depredations committed upon it by these animals.

'My honoured friend, Dr. Martin Lister, informed me that, 'of his own knowledge, one and the same swallow, by the 'subtracting daily of her eggs, proceeded to lay nineteen suc- 'cessively, and then gave over.'—Ray.

It is an interesting fact in natural history, that if you remove one or more eggs from the nests of some birds, before they have completed their natural complement, they will continue laying a great number afterwards. Thus if the peewit (Tringa Vanellus) is deprived of only one egg after she has completed her number, she immediately forsakes the rest; if however, she has but one other to lay, and all but one of her eggs are removed, she will continue to lay for ten or twelve days, and sometimes more, successively. The same has been observed of the blackbird, lark, and the long-tailed titmouse: the latter has gone on to lay as many as thirty eggs before she began to sit, a friend of mine having removed that number.* In the case especially of the lark, if only one or two eggs are allowed to remain in the nest, the bird will go on to lay for a time indefinite; but if there are three, she will sit. The usual number of eggs in a lark's nest is five.

This is one of those mysteries in nature which it is

* An eminent surgeon in London informs me that he removed twelve eggs from a hedge-sparrow before she shewed any inclination to sit.

not easy to account for. We find that a bird, as soon as it has deposited four eggs in its nest, as in the case of the lapwing, immediately ceases to produce any more; but if disturbed in its arrangements, will go on to lay perhaps five times that number, and yet cease the moment it has collected its usual number for hatching in the same spot. This property does not seem to belong to our domestic fowls. A hen, when she wants to sit, will as readily do so upon one egg as more, and so will a turkey. This latter bird is of a very torpid nature, and will continue to sit for many months together, on a very scanty supply of food. The persons who breed very early poultry for the London market, have a secret for preserving the vital property in eggs laid in the spring and summer till late in the autumn, when they are put under turkies who have been kept sitting, and are hatched early in the winter. These persons chiefly reside near Chertsey, in Surrey, and the neighbouring country; and the secret for preserving the eggs in a proper state for hatching is strictly preserved amongst them. I have visited one of their cottages, and found the only room surrounded with small square pens, in which the turkies were sitting. They are occasionally taken off the nest for a short time, and then returned to it.

It appears difficult to assign a reason why birds of the same size and species should produce eggs of a different shape and colour. The hedge-sparrow's egg is blue; while that of the robin, who lives on the

same sort of food, and is like it in various particulars, produces an egg of a darkish brown and white colour, ornamented with yellowish brown spots. The cormorant has pale green eggs, while the egg of the gannet is white: both these birds feed on fish. The eggs of the rook, magpie, and lapwing, are nearly similar in size and appearance. Those of the pigeon, owl, and kingfisher, are white; and those of the blackbird of a bluish green. In like manner, the eggs of the land tortoise are of a dusky, brownish white; and those of the crocodile of a bluish white. Even hens in the same poultry-yard, and fed on the same food, produce eggs of a different colour, some being much darker than others. I have also observed that some ducks of the same breed have white eggs, and others bluish ones. Hens sometimes produce eggs with a double yolk in them, and others have been found with a double shell. It is a curious and interesting fact, that the spot on the upper surface of the yolk of an egg, being that in which the future chick is placed, is so much lighter than the opposite side, that in whatever position the egg is placed, this part is always opposed to the belly of the incubating bird.*

Another wonderful fact respecting eggs is that some birds have the property of either retaining their egg after it has arrived at maturity, or of suppressing altogether the further progress of those eggs which had arrived at a certain size in the ovarium. I have on several occasions purchased pullets for my farm-

* Blumenbach.

yard which had just begun to lay. Perhaps on their way to their new home they would drop one egg in the basket in which they were confined; but I have invariably found that, on arriving at a strange place, they have altogether ceased to lay any more eggs till they had become habituated to their companions, and had made themselves acquainted with the localities of their new situation. We know, on opening a pullet who has just begun to lay, that there is a regular succession of eggs of different sizes in the ovarium. Some are nearly complete, others are as large as a marble, and others of the size of a pea. The circumstance of birds being endowed with the extraordinary property of preventing the eggs from arriving at maturity, when their usual habits or place of abode have been changed, is one of those facts in natural history on which little light has yet been thrown. If the leg of a pullet is broken after she has laid two or three eggs, and she is thus prevented from seeking enough of that substance which is necessary to be taken into the stomach with her food, for the purpose of encrusting the egg, she will perhaps drop one without a shell, and then cease altogether from laying any more till the bones of her leg are knit, and she is able to go about as usual. She then begins to lay again, but the number is regulated by those she had previously laid. Suppose, for instance, that she had laid four eggs before her leg was broken, and that the quantity in her ovarium when she first began was sixteen, she would, when she resumed her laying, only produce the remaining twelve. From this it is clear

that a certain quantity of some material—lime and chalk probably—is necessary to enable a hen to produce a perfect egg, and that the want of it retards the process going on in the ovarium, without producing any immediate injury to those eggs which were in a gradual process towards maturity. In the instance already mentioned of hens ceasing to lay on being brought to a strange place, it was probably occasioned by their restlessness, and not knowing at first where to go in search of what was necessary to enable them to bring their eggs to perfection. It is much to be wished that this curious subject should engage the attention of naturalists more than it appears to have done.

'Prythee do not value thyself on thy reason at that exor-
'bitant rate, and the dignity of human nature; take my word
'for it, a setting-dog has as good reason as any man in Eng-
'land.'—SPECTATOR.

THE captain of a trading vessel, who now resides at Brighton, picked up lately a dog at sea, more than twenty miles from land. This circumstance may throw some light on the fact of dogs, which have been sent to France or Ireland from England, finding their way back. The present Earl of L—— sent some drafted hounds from his kennel in Cumberland to Ireland, where they were safely received, and a receipt given for them to the person who brought them over. Three weeks afterwards two of these hounds made their appearance at Lord L.'s kennel, though in a very exhausted state. A gentleman also informed me that a pointer-dog which had been left at Calais made its way over to England. The most amusing fact of this kind that I know of is one that was related to me by a gentleman on whose veracity I can place most implicit reliance; and though it may appear to some of my readers to border upon the marvellous, I think it too entertaining to withhold it. He informed me that a friend of his, an officer in the Forty-fourth Regiment, who had occasion, when in Paris, to pass one of the bridges across the Seine, had his boots, which had been previously

well polished, dirtied by a poodle-dog rubbing against them. He in consequence went to a man who was stationed on the bridge, and had them cleaned. The same circumstance having occurred more than once, his curiosity was excited, and he watched the dog. He saw him roll himself in the mud of the river, and then watch for a person with well-polished boots, against which he contrived to rub himself. Finding that the shoe-black was the owner of the dog, he taxed him with the artifice; and after a little hesitation he confessed that he had taught the dog the trick in order to procure customers for himself. The officer, being much struck with the dog's sagacity, purchased him at a high price, and brought him to England. He kept him tied up in London some time, and then released him. The dog remained with him a day or two, and then made his escape. A fortnight afterwards he was found with his former master, pursuing his old trade on the bridge.

Nor is a dog the only animal which has shown an extraordinary faculty in finding his way home. The following anecdote was related to me by Edward Hawke Locker, Esq., one of the Governors of Greenwich Hospital, the circumstance having happened while he was in the Mediterranean. It is also mentioned in a note in Messrs. Kirby and Spence's Entomology, who state that they had it from Lieutenant Alderson of the Royal Engineers, who was personally acquainted with the facts.

In March, 1816, an ass, the property of Captain Dundas, R.N., then at Malta, was shipped on board

the Ister frigate, Captain Forrest, bound from Gibraltar for that island. The vessel having struck on some sands off the Point de Gat, at some distance from the shore, the ass was thrown overboard, to give it a chance of swimming to land—a poor one, for the sea was running so high, that a boat which left the ship was lost. A few days afterwards, however, when the gates of Gibraltar were opened in the morning, the ass presented himself for admission, and proceeded to the stable of Mr. Weeks, a merchant, which he had formerly occupied, to the no small surprise of that gentleman, who imagined that, from some accident, the animal had never been shipped on board the Ister. On the return of this vessel to repair, however, the mystery was explained; and it turned out that Valiante (so the ass was called) had not only swam safely to shore, but without guide, compass, or travelling-map, had found his way from Point de Gat to Gibraltar, a distance of more than two hundred miles which he had never traversed before, through a mountainous and intricate country, intersected by streams, and in so short a period that he could not have made one false turn. His not having been stopped on the road was attributed to the circumstance of his having been formerly used to whip criminals upon, which was indicated to the peasants, who have a superstitious horror of such asses, by the holes in his ears, to which the persons flogged were tied.

I have also been assured that a favourite cat belonging to a nobleman, and who had been conveyed to

his country-seat more than an hundred miles from London, found her way back to his house in town. Nothing can be more extraordinary than the way in which bees find their way back to their hive. Place it amongst hundreds of others, exactly similar in outward appearance, or at the top of a house in London,* or concealed in the thickest wood, and the bee will regain it without the slightest apparent difficulty. Huber says they fly to it with an extreme rapidity, and as straight as a ball from a musket. Nothing can show more forcibly the wonderful instinct which has been given to these insects, by Almighty God. If they experienced any difficulty in finding their homes, how much time would be lost, and how inadequate would all their labours and industry be, to furnish a sufficient store of honey to exist upon during the winter! I have always observed that when a fresh hive has been brought to my garden from a distant place, the bees employ themselves on first leaving it, not in collecting honey, but in making themselves acquainted with all the neighbouring objects, and these objects may possibly serve to guide them to their respective homes. Some naturalists are of opinion that this recognition of home is the result of memory. Perhaps in some instances it is so, but memory could not have guided an ass over two hundred miles of country, which he had never passed before; and the same unexplained

* I was shown a fine glass of honey taken from a hive of bees placed on the top of a house in Harley-street.

instinct which brought him back to his stable at Gibraltar, may guide the bee to his hive.

This instinctive sagacity, which guides animals who have been taken from their old haunts, in making their way back to them, appears in some to whom we should have been less disposed to attribute it. I have an anecdote from a gentleman, who resided some years on an estate high up the Susquehannah, of some pigs, which, having been brought in a sack fifteen miles through an American wood, by the next morning had found their way back, from their new to their old home. I have also been assured that Welsh sheep have been known to find their way back, from the neighbourhood of London, to their native mountains. It is no uncommon thing for dogs who have been taken a great distance in carriages, to make their way home again, and that in a very short space of time. A friend of mine took a pointer dog in his carriage, to some shooting ground in Scotland, more than a hundred miles from his house. Upon receiving some correction from his master, he left him, and made his way back to his kennel.

A friend of mine had a poodle-dog possessed of more than ordinary sagacity, but he was, however, under little command. In order to keep him in better order, my friend purchased a small whip, with which he corrected the dog once or twice during a walk. On his return the whip was put on a table in the hall, and the next morning it was missing. It was soon afterwards found concealed in an out-

building, and again made use of in correcting the dog. It was, however, again lost, but found hidden in another place. On watching the dog, who was suspected of being the culprit, he was seen to take the whip from the hall-table, and run away with it, in order again to hide it. The late James Cumming, Esq., was the owner of the dog, and related this anecdote to me. Let me here pay my little tribute of affection to his memory. He was one of my oldest friends, and those who knew and loved him as I did, will join with me in opinion, that, in addition to fine sense, and indefatigable research, (of which he gave a proof in his very able reports on the Revenue of India,) he was possessed of the kindest heart, and the most agreeable manners and conversation. His early death was deplored by numerous friends, amongst whom were many men of high rank and great talents.

'As that ungentle gull, the cuckoo's bird,
'Useth the sparrow.'—SHAKSPEARE.

PERHAPS few birds have excited more curiosity amongst naturalists than the cuckoo, and some rather contradictory accounts have from time to time been published respecting them. Dr. Jenner was the first who threw any light on the natural history of this extraordinary bird: and his account is most interesting and satisfactory. The fact of the young cuckoo turning out its weaker companions, the natural inmates of the nest, is now undisputed. This operation is, I believe, generally performed on the second day after the birds are hatched,—at least, I have found it to be so in the cases which have come under my own observation. The young intruder seems to confine his dislike to his nestling companions to the act of discharging them from the nest. In one instance, which I had an opportunity of observing, the young birds, which had only been hatched two days, were so little hurt by a fall of four feet from the nest to the ground, that two of them contrived to crawl a distance of eight or nine feet from the place on which they had fallen. Sometimes the young cuckoo is hatched before the other birds: in which case he proceeds to discard the eggs, which he is enabled to do by means of a depression

in the middle of his back. It seems, however, to have escaped the notice of those to whom we are most indebted for the agreeable information we already possess of the habits of the cuckoo, that the parent bird, in depositing her egg, will sometimes undertake the task of removing the eggs of those birds in whose nest she is pleased to place her own.* I say sometimes, because I am aware that it is not always the case; and indeed I have only one fact to bring forward in support of the assertion; it is, however, connected with another relating to the cuckoo, not a little curious. The circumstances occurred at Arbury, in Warwickshire, the seat of Francis Newdigate, Esq., and was witnessed by several persons residing in his house. The particulars were written down at the time by a lady, who bestowed much time in watching the young cuckoo, and I now give them in her own words:—'In the 'early part of the summer of 1828, a cuckoo, having 'previously turned out the eggs from a water-wag-'tail's nest, which was built in a small hole in a 'garden-wall at Arbury, deposited her own egg in

* May she not do this in consequence of not being able to find a nest fit for her purpose, and therefore, from some extraordinary and powerful instinct, she removes eggs which would be hatched before her own, and the young birds from which might become too strong and heavy to be ejected from the nest by the young cuckoo? It requires all the exertions and activity of a pair of water-wagtails or hedge-sparrows to provide for a young cuckoo. If there were other birds in the nest, some must starve. The female cuckoo, by ejecting the eggs, prevents this.

'their place. When the egg was hatched, the young 'intruder was fed by the water-wagtails, till he be-'came too bulky for his confined and narrow quar-'ters, and in a *fidgetty* fit he fell to the ground. In 'this predicament he was found by the gardener, who 'picked him up, and put him into a wire-cage, which 'was placed on the top of a wall, not far from the 'place of its birth, Here it was expected that the 'wagtails would have followed their supposititious 'offspring with food, to support it in its imprison-'ment—a mode of proceeding which would have had 'nothing very uncommon to recommend it to notice. 'But the odd part of the story is, that the bird 'which hatched the cuckoo never came near it; but 'her place was supplied by a hedge-sparrow, who 'performed her part diligently and punctually, by 'bringing food at very short intervals from morning 'till evening, till its uncouth foster-child grew large, 'and became full feathered, when it was suffered to 'escape, and was seen no more: gone, perhaps, to 'the country to which he migrates, to tell his kin-'dred cuckoos (if he was as ungrateful as he was 'ugly when I saw him in the nest) what fools 'hedge-sparrows and water-wagtails are in Eng-'land. It may possibly be suggested, that a mis-'take has been made with regard to the sort of bird 'which hatched the cuckoo, and that the same bird 'which fed it, namely, the hedge-sparrow,* hatched

* It could not have been the hedge-sparrow, as those birds are never known to build in a hole in a wall.

'the egg. If this had been the case, there would 'have been nothing extraordinary in the circum- 'stance; but the wagtail was too often seen on her 'nest, both before the egg was hatched, and after- 'wards feeding the young bird, to leave room for 'any scepticism on that point; and the sparrow was 'seen feeding it in the cage afterwards by many mem- 'bers of the family daily.'

This account (the accuracy of which no one can doubt, who is acquainted with the party from whom it comes) seems to prove the assertion which some persons have made, of cuckoos having introduced their eggs into the nest of the wren, or into nests built in holes in the wall; or, as Dr. Jenner asserts, in a wagtail's nest in a hole under the eaves of a cottage. Some doubt has been thrown on the accuracy of this statement of Dr. Jenner's, in a new and very agreeable edition of Colonel Montague's Ornithological Dictionary: at least, a hint is given that it was rather a singular place for a wagtail to build in. I have, however, found them in similar situations; and one wagtail built amongst the rough bricks which formed some rock-work in my garden. If the fact, therefore, is undoubted, that the egg of the cuckoo is found in the nest of a bird built in so small a hole in a wall that a young cuckoo could no longer remain in it, by what means could she contrive to introduce her egg into the nest? It appears quite impossible that she could have sat on the nest while she deposited her egg; and it is not easy, therefore, to form a probable conjecture how the ope-

ration was performed. Spurzheim, however, asserts in his Lectures, that he actually saw an instance of a cuckoo having dropped her egg near a nest so placed that she could not possibly gain admittance to it: and that after removing the eggs which were already in the nest, she took up her own egg in one of her feet, and in that way placed it in it.

The following communication from a gentleman in Sussex will throw some new and interesting light on the Natural History of the Cuckoo. He says, that on firing at a bird sitting on a fir tree in his garden, and which he took for a hawk, it fell with a broken wing. On picking it up, it proved to be a cuckoo, and being in beautiful plumage, and very lively, he tied up the wing, and sent it to a friend at Chichester, who being captivated by the bird's quiet demeanour, determined on trying to keep it alive. On being put into a cage, the bird soon fed, and appeared perfectly reconciled to its loss of freedom. It eat fresh meat of any sort, cut small and mixed with bread scalded and broken, and a raw egg. On this diet the bird did well for three months. At this time a lad brought some yellow-hammer's eggs, intending them as a treat, one of which the bird unexpectedly seized, and attempted to swallow. It stuck, however, in its throat, and killed it in a short time. This would seem to prove that these birds feed sometimes on eggs. A cuckoo was kept at Goodwood-house for nearly two years. The persons who had the care of it never heard its natural note of "Cuckoo." It is not unfrequent soon after the

arrival of these birds, to see four or five, or more of them in animated sportiveness on the branches of an oak. If the spectator is attentive, he will soon hear the notes repeated thus,-Hoo-hoo —hoo-hooho-hoo — which, probably, are notes of exultation from the favoured suitor. When a cuckoo is seen in a straight flight, it will often give utterance to a beautiful sound, more like a delicate and lengthened shake on the flute than anything else it can be compared to. As the bird is always alone when this note is heard, we may conclude that it is a call for its mate.

'Hark! what loud shouts
'Re-echo through the groves! he breaks away·
'Shrill horns proclaim his flight.'—SOMERVILLE.

SOME curious instances have been related to me of the cunning evinced by foxes, not only in the preservation of their lives, but in procuring themselves food. A fox, which had been frequently hunted in Leicestershire, was always lost at a particular place, where the hounds could never recover the scent. This circumstance having excited some curiosity, it was at last discovered that he jumped upon, and ran along a clipped hedge, at the end of which was an old pollard oak tree, hollow in the middle. He crept into this hollow, and lay concealed till the alarm was over. His retreat, however, being discovered, he was driven from it and killed. Another fox selected a magpie's nest as a place of retreat, and was discovered in consequence of a labouring man having observed a quantity of bones, feathers of birds, &c., on the ground under the nest. The following fact may be relied upon, extraordinary as it may appear. I received it from a gentleman of the strictest veracity, and who communicated it to me very recently, on his return from the south of France, where he had been residing for some months. A friend of his, with whom he passed much of his

time there, was in the habit of shooting in a part of the country where there was much wild and rocky ground. Part of this rocky ground was on the side of a very high hill, which was not accessible for a sportsman, and from which both hares and foxes took their way in the evening to the plain below. There were two channels or gullies made by the rains, leading from these rocks to the lower ground. Near one of these channels, the sportsman in question, and his attendant, stationed themselves one evening in hopes of being able to shoot some hares. They had not been there long, when they observed a fox coming down the gully, and followed by another. After playing together for a little time, one of the foxes concealed himself under a large stone or rock, which was at the bottom of the channel, and the other returned to the rocks. He soon, however, came back, chasing a hare before him. As the hare was passing the stone where the first fox had concealed himself, he tried to seize her by a sudden spring, but missed his aim. The chasing fox then came up, and finding that his expected prey had escaped, through the want of skill in his associate, he fell upon him, and they both fought with so much animosity, that the parties who had been watching their proceedings came up and destroyed them both.

Pontoppidan informs us, that when a fox observes an otter go into the water to fish, he will frequently hide himself behind a stone; and when the otter comes to shore with his prey, will make such a spring

upon him, that the affrighted animal runs off, and leaves his booty behind. Mr. Bingley quotes this anecdote, but without giving much credit to it.

In Smith's Directory for destroying vermin, we find it said that the fox exhibits a great degree of cunning in digging young rabbits out of their burrows. He does not try to enter the hole; for in this case he would not only have to enlarge it, but have also to dig several feet along the ground, under the surface of the earth; but he follows their scent above, till he comes to the end, where they lie; and then scratching up the earth, descends immediately upon, and devours them.

Buffon considered that the fox ought to be placed amongst the higher order of quadrupeds, from the great care and dexterity they show in the construction of their habitations. Some of them are placed in extraordinary situations, a fox having been known to let himself drop from the edge of a precipice on a projecting piece of rock just below it, from which he got into his hole or den. These dens are sometimes provided with outlets, by which the fox may effect his escape.

Buffon says that foxes are so fond of honey, that they will sometimes attack bee-hives, and even the nests of wasps, for the sake of what they can find to eat; and that they frequently meet with so rough a reception as to be obliged to roll themselves on the ground, to get rid of the insects that are stinging them. They then, he says, return to the charge, and generally succeed in securing the combs. I

have, however, kept bees where there were many foxes in the neighbourhood, who could have gained access to my hives without any difficulty. I never had any reason to suspect that they in any way molested them, nor did it ever fall in my way to hear an instance of this having happened in this country.

'The poor fish have enemies enough, besides such unna-'tural fishermen as otters, the cormorant, and the bittern.'—WALTON'S ANGLER.

I WENT lately to see a fine heronry at Sir Henry Fletcher's park, Walton-on-Thames. The nests are built on the top of some of the finest fir-trees in the kingdom, and appear somewhat larger than those of the rook. These birds must go an amazing distance to provide food for their young, as I have been assured that the bones of sea-fish have been found under the nests. They appear to be slow and heavy fliers.

A young bird from this heronry, having fallen out of the nest, was taken away in the evening by a gentleman, who carried it to his house at some miles distance, and turned it into a walled garden that night. The next morning, one of the old birds was seen to feed it, and continued to do so till the young one made its escape. This bird must have gone over a very considerable space of ground in search of the young heron.

A large assembly of herons takes place at certain times of the year in Richmond Park, where I have counted from fifty to sixty at a time. Sometimes they may be seen on the tops of trees, and at others on the ground at a distance from the ponds, appearing perfectly motionless till they are disturbed. This

assemblage is very curious. The nearest heronry from Richmond Park is the one near Walton-on-Thames, and the other in Windsor Great Park, both of which would scarcely furnish the number above mentioned. There seems to be no reason why they should congregate and remain for so long a time in the listless manner in which I have seen them; nor can one give a probable reason why the birds from two heronries should meet at the same time in a place so far distant from their usual haunts. It is seldom that one sees more than two or three herons together in the same place, and then only when they are watching for their prey.

A bittern (*ardea stellaris*) was lately shot by one of the keepers in Richmond Park. Though nearly dead when he was going to pick it up, it showed considerable ferocity.

From the scarcity of this bird in England, few people are acquainted with the dismal noise it sometimes makes. Mr. Rennie describes it in a very picturesque manner.

'Those,' he says, 'who have walked in a summer's evening by the sedgy sides of unfrequented rivers must remember a variety of notes from different water-fowl; the loud scream of the wild goose, the croaking of the mallard, the whining of the lapwing, and the tremulous neighing of the jack-snipe. But of all these sounds there is none so dismally hollow as the booming of the bittern. It is like the interrupted bellowing of the bull, but hollower and louder, and is heard at a mile dis-

'tance, as if issuing from some formidable being that 'resided at the bottom of the waters. This is the 'bittern, whose windpipe is fitted to produce the 'sound for which it is remarkable. These bellowing 'explosions are chiefly heard from the beginning of 'spring to the end of autumn; and are the usual 'calls during the pairing season.'

> 'At evening, o'er the swampy plain.
> 'The bittern's boom came far'

I have been informed by keepers that, if they wound a bittern, it requires great caution in taking it up, as it will frequently dart its pointed beak at their faces, and it always makes a vigorous resistance. Mr. Bingley says that this bird will wound the leg of the sportsman even through his boot; and that it sometimes turns on its back, and, like the rapacious birds, will fight with both its bill and its claws. When surprised by a dog, it is said always to throw itself into this posture.

Living near the Thames, some of my kind neighbours, knowing my fondness for collecting specimens of natural history, frequently send me aquatic birds which have been shot on that river during a hard winter. I have had some rather rare ducks sent me and a grebe or two. The latter make their appearance in greater or less numbers about us every winter. Some wild swans were also shot last winter. I sent two fine specimens of the male and female

mergus to the Zoological Museum. The male bird was a rare and beautiful specimen, the person who stuffed it having informed me that he only knew of one other like it in any of the collections in the metropolis. It is to be regretted that those who accidentally procure a scarce bird do not present it to those disinterested friends of science, the Zoological Society. It would be the means of enriching their already valuable museum, and thus extend its utility and agreeable resources for the benefit of all lovers of natural history.

——'Tread softly, that the blind mole may not
'Hear a foot fall; *we now are near his cell.*'
SHAKSPEARE.

THE mole-hills which we see in fields and meadows are thrown up by the mole probably during its search for food. Little was known of the natural history of this animal, till a French naturalist, M. St. Hilaire, published lately some interesting particulars respecting it. The mole forms several underground passages; and the way she proceeds in doing this is as follows:—she first makes a *run* in various directions, by undermining the ground, and unites this and several others at one point, making, however, some of them larger than the others. M. St. Hilaire says that she finishes by arranging them with the most perfect symmetry, plastering the sides with great care; and when completed, it may be called her *encampment.* In the centre of these works she establishes herself, and appropriates a separate place to the reception of her young, which is in some respects differently constructed from her own. In order to render the respective habitations which she and her young occupy not liable to be injured by the rain, she makes them almost even with the ground, and higher up than the runs, which serve as drains, or channels, to carry off the water. She makes choice of the place of her abode with the

greatest care, sometimes constructing it at the foot of a wall, or near a hedge or a tree, where it has the less chance of being broken in. This abode is sometimes protected by having a quantity of earth thrown over it, especially in light soils, where I have seen a mound almost large enough to fill a wheelbarrow. Sometimes, however, no earth is thrown up over the habitation. This precaution of the mole is very necessary, to prevent the places she has chosen for retreats for herself and her young from being trampled in. When a mole has occasion to make her run through a gateway, I have observed that she generally carries it as near as possible to the gate-post, where it is less likely to be injured. Some runs are so near the surface, that I have seen the ground crack during the animal's progress in working them. The bed for the young is composed of the blades of wheat, with which the mole forms a sort of mattress. Four hundred and two of them were counted in one nest, and all so fresh in their appearance, that they had been probably collected by this little animal in the course of two or three days. This shows not only her extraordinary industry, but the great depredation she must commit.

The mole is never known to work for food near the place which she has fixed upon for her abode. She labours to procure it about two hours in the morning, and as many in the evening, and then returns to her home or resting-place, which is so constructed, that she is instantly made aware of any danger. This effect is produced by forming the

upper runs in a sort of circle, so as to communicate a vibration when anything passes over them. The mole then takes alarm, and escapes by one of her *safety* runs.

The mole is not often seen on the surface of the earth. I once, however, caught one, and turned it loose upon a lawn, the turf of which was on a bed of strong gravel, and particularly hard and dry. Notwithstanding these disadvantages, the mole contrived to bury itself almost in an instant, working into the earth by means of her snout and fins (for they can hardly be called feet) so fast, that the ground seemed to yield to her mere pressure.

The power of smelling in the mole is very acute; and it is supposed that this sense serves to direct her in the search of her food. She hunts after beetles and worms, which last she pursues eagerly, but not always successfully; for the earth-worm is aware of its danger, and quick in escaping from it. Her search for prey taking place in the morning and evening, when birds are more generally on their feed, must be the means of contributing greatly to their subsistence by driving worms to the surface of the earth, and furnishes another striking proof that the 'fowls of the air' have their food provided by an almighty and superintending Providence in a variety of ways.

Le Court, who assisted M. St. Hilaire in his observations, and who appears to have been a sort of philosophical mole-catcher, was surprised when the naturalist expressed a doubt as to the mole seeing.

He informed him that, in swimming rivers, they habitually guide themselves by their sight; but, in order to satisfy M. St. Hilaire on this point, he contrived the following experiment with him:—They made two openings in a dry tiled drain, at one of which several moles were successively introduced. Le Court took his stand at the other. If he stood quite still, the mole soon came out and escaped; but if, at the moment in which she showed herself at the hole, he moved only his thumb, she stopped and turned back. By repeating this as often as she reappeared, the mole was kept imprisoned in the drain.

There has been a very general idea amongst our mole-catchers, that if the smallest drop of blood is taken from a mole, it occasions instant death. Le Court seems to account for this opinion in speaking of the fights which take place between the male moles, by saying, that if one is ever so slighly wounded in a vein near the ear, the wound is mortal.

In order to ascertain the rate at which a mole moved, he put in practice the following curious experiment:—He placed some slight sticks, with little flags at the top of them, in the run of a mole, which he had previously ascertained by tracing it to be of considerable length, and along which the mole passed and re-passed four times a day in search of food. These sticks were placed at certain intervals in the run, so that if the mole touched them, the flag would instantly show it. He then introduced a horn at one extremity of the run, and blowing it loudly, frightened the animal; and she then went along the

run at such a rate, moving the flags in her passage, that Le Court and his friends, who were stationed at intervals along the run to assist in the observation, considered that she went as fast as a horse could trot at its greatest speed.

Hunger in the mole is thought to be a more violent feeling than fear; and its appetite is singularly voracious. If it sees a bird near, it quits its hole—approaches as if to attack it; and if the bird pecks it, the mole retires towards its hole, and tempts the bird to follow. She then watches her opportunity—darts upon it—seizes it by the belly, which she tears open, assisting herself for this purpose with her *flaps*, and, thrusting her head into it, devours it. She drinks as greedily as she eats. The mole does not, like the mouse, lay up a store of food, as she preys on worms and various kinds of insects: she will also eat frogs, but will not touch a toad, if ever so hungry. A mole was tried with eggs and oysters, but refused to eat either. They will, however, eat fruit, and, Buffon says, acorns. If two moles are shut up together without food, the strongest will devour the weakest, even to the bones: nothing but the skin is left, which they never eat, and which, when one has killed the other, is always seen to be ripped up along the belly. It was found that ten or twelve hours was the longest time they could live without food. This fact seems to prove that the mole is not torpid in frosty weather, which Linnæus asserted she was. It is known that, in such seasons, worms, ants, and the larvæ of cockchaffers and beetles penetrate deep into

the ground. It is probable, therefore, that the runs of the mole made in search of food are regulated, as to their depth, by the habits of the grubs on which she feeds. One would suppose, from the texture of its fur, which is particularly short and thick, that the mole is not very susceptible of cold. Indeed, its whole formation is admirably adapted to its mode of life.

It has been said that the mole, when the ground which it frequents is flooded, will climb up trees. This, however, seems to be unnecessary, as I have seen it swim with perfect ease, which indeed Le Court had also observed.

'Now air is hush'd, save where the weak-eyed bat,
'With short, shrill shriek, flits by on leathern wing.'

COLLINS.

It is probable that we had formerly a larger breed of bats in this country than we find at present. One of the workmen employed in the repairs of Cardinal Wolsey's Hall, in Hampton Court Palace, brought me the skeleton of a bat, which he found at the end of one of the rafters of the ceiling. The animal, when alive, must have been as large as a pigeon. The *hooks* were very strong. The natural history of the bat is very curious, and we have some particulars respecting it in M. St. Hilaire's work, to which I have already referred in speaking of the mole. The claws of the hind feet of the bat are all of an equal length, and thus better adapted for enabling the animal to suspend itself, which it does with the head downwards, that being its natural posture of repose.* By adopting this attitude, the bat, on being disturbed, can readily disengage itself, and dropping into the air, can take flight immediately. If, on the contrary, the animal rested upon a surface, it is well

* A large quantity of bats were lately discovered in an old tree in this neighbourhood, and all of them hanging with their heads downwards. One of them, which I kept under a glass in my room, always turned his back to the light, and did not move during the day.

known that it could not easily raise itself. Even if it perched with its head upwards, it could not disengage itself so readily, or be aware of the approach of danger, so soon as it does whilst resting with its head downwards. The wings of the bat serve them as a sort of mantle or cloak when at rest, and in which they sometimes also cover up their young, though they will at other times fly about with two of them hanging to the breast in the act of sucking. The wings, by their delicate structure and extent, serve as feelers to the animal in guiding its flight in the dark. The celebrated naturalist Spallanzani ascertained this to be the case by the following experiment. He hung up some cloths across a long room, with holes in them here and there, large enough for a bat to fly through. He had previously prepared some for this experiment by depriving them of their sight, and, as much as possible, of their hearing. On being turned loose, he found that they flew without the least difficulty through the holes in the cloths. It is inferred, that as they did not anywhere touch the cloth, they must have been warned of their approach to it by feeling the repulse of the air set in motion by their wings, and have distinguished the hole by no such reaction taking place. It was observed in the case of a blind boy, who was coming towards a person who stood perfectly still in the room where he was, that when he had approached within a short distance, he suddenly stopped, stamped with his foot, and then turned off to one side. He must have perceived a difference in the action of the

air. But I once observed a still more extraordinary instance of this susceptibility in discovering danger, in the case of a blind horse. I was in the habit of driving this horse in a gig, and by way of experiment I often brought him suddenly up to a closed gate, through which he had probably never before passed, but he always stopped short, and I never could force him against it. This horse was perfectly blind, and must have avoided the gate, in consequence of perceiving that there was some immediate intervening object which obstructed that current of air which he had previously been conscious of. We know that a blind horse will sometimes step into a hole or a ditch, but he rarely runs himself against a post or a tree. It may be thought that, in these two last instances, the *ears* assisted in guiding, probably by their being able to perceive a difference in the sound of their step.

But to return to the bat. She will sometimes settle on the ground, and when she does this, she shuts up her wings, and is then able to walk and even to run, at a good pace, though with considerable awkwardness. She probably only alights on the ground in search of food when she is unable to procure it on the wing. When on the ground, she runs to find some eminence from which she may raise herself into the air. Bats hybernate by getting into concealed places for security, and they then wrap themselves up in their wings.

Bats seem to be gregarious animals. Vast numbers of them were lately found under the roof of an

old building in Richmond Park. I had two sorts of them brought to me, nearly similar in shape, but one very considerably larger than the other. This latter is probably the *Vespertilio altivolans* mentioned by Mr. White in his Natural History of Selborne, answering to his description of it, and the *Vespertilio noctula* of Bell's Brit. Quad. It measured nearly fifteen inches from the tip of one wing to the tip of the other. Its ears were very short, and its fur of a chestnut colour. The place where it was found had a most offensive and noisome smell. These larger bats were quite as numerous as the smaller species. A great number of them were also found in an old building in Coombe Wood adjoining Richmond Park; and subsequently (in November last) ten of them were discovered in a decayed tree in that Park. This circumstance shows that they do not migrate as Mr. White thinks they may do. In further proof of which it may be mentioned that about thirty of these bats have been colonized for two or three years in a hollow tree in the gardens at Hampton Court, and where they at present remain (Feb. 1838.)

'There arise insurmountable difficulties when we go about 'to consider what relation any one body bears to another.'—EDWARDS.

IT is extremely difficult to trace satisfactorily the 'links of nature's chain,' in the several gradations by which they connect animal and vegetable beings. These links are much more extensive than is generally supposed. Some of them are evident enough, and others we are at a loss to determine whether they should be classed amongst animals or vegetables. Mr. Edwards* seems to think that many of them may be deemed of a middle nature, partaking of both; for, though some of the polype and coralline species seem to adhere by roots, and increase as vegetables do, by shooting forth young polypes from their sides, and by becoming perfect polypes from the divided parts of others, which are marks of vegetation, they have at the same time a power to move their parts, and put forth tentacula or arms, with which they catch small insects whereon they feed, thereby showing that they partake of an animal nature.

A person lately sent me an animal which fishermen call a sea-mouse, and which seems to partake of the properties of both fish and insect. It was about three inches and a half in length, and was

* See his Essays on Natural History.

covered with a beautiful silky hair on the sides, which put forth a variety of colours in the sun, like spun glass. The belly appeared like that of the wood-louse; and, like that insect, it had the power of rolling itself up on being disturbed. On each side of the belly there were twenty or thirty little fleshy excrescences, each of which had five or six black hairs in it about a quarter of an inch long, with which the creature moved itself along. It is, I believe, an aphrodita, but its relations are very obscure. It is called by the French naturalists *la taupe de mer*. It is perhaps going too far to call this animal one of nature's links, though it certainly appears like one.

The humming-bird moth (*sphinx stellatarum*) might almost be thought also to be a link between the bird and an insect. It hovers over flowers in a most rapid and elegant manner, as the humming-bird is described as doing—unfolds its long tongue, and extracts the honey from flowers, making a humming noise the whole time. Its motions are so rapid, especially on a sunny day, that it is extremely difficult to follow them. There is also a wildness in its habits which partakes very much of those of a bird.

'Birds are extremely important creatures for the economy
'of nature in general. They destroy innumerable insects, and
'the thoughtless extirpation of some birds, supposed to be
'noxious, such as sparrows, crows, &c., has generally given
'rise to an infinitely more prejudicial multiplication of ver-
'min.'—BLUMENBACH.

It is a general observation of the country people, that when there is an unusual number of hawthorn and holly berries, there will be a hard winter. The remark is perhaps more true than is generally supposed, and may be considered as a proof of the care which is taken by an Almighty Power of its creatures. How many birds would perish during a severe winter, if this provision had not been made for them! Even the circumstance of some springs not freezing is an instance of the same goodness. If they did, the destruction of animal life would be much greater than it now is. At present many birds are able in hard weather to find water and food. The robin, thrush, and blackbird, with woodcocks and snipes, resort to these springs, and are able to support life with the worms and insects they find in or by the side of them, till more genial weather arrives. In deep snow many birds frequent woods, where, amongst old dead or decayed trees and the bark of others, they discover and feed upon insects. Horses and deer scrape away the snow with their feet to get at the grass, and hares and rabbits feed on the bark of trees. The titmouse in frosty weather gets near houses and picks

meat from bones. The hedge-sparrow and wren search at the bottoms of hedges, where the snow has not penetrated, for insects. The wood-pigeon feeds on the tops of turnips, while sparrows, finches, yellowhammers, &c., get into rick-yards to satisfy their hunger. Most birds therefore are able to procure some sort of sustenance during a hard winter; and some animals remain during that period in a state of torpor, from which the influence of the sun in spring revives them. Insects appear but little affected by cold weather, as we see many on the first mild day after the severest frosts. Bees survive the coldest winters in Russia, and afterwards lay up much store of honey.

We thus see that, however miserable the condition of birds in severe weather may appear to a cursory observer, they have resources provided for them in various ways. The same beneficent Being who created them provided at the same time means for their subsistence. It is man who occasions the chief miseries of the creatures which surround him. When, however, we consider that these creatures are the objects of God's care, how careful ought we to be never to inflict any unnecessary pain or misery upon them. I should not think kindly of that man who could wantonly put his foot on a worm which was crossing his path, or destroy a fly for the gratification of doing so.

'Poor harmless fly!
'That, with his pretty buzzing melody,
'Came here to make us merry; and thou hast kill'd him.'

The countless myriads of insects which surround us are necessary for the support of various kinds of birds.

I take great pleasure in watching the activity of those which feed on flies. The water-wagtail darts after them with great rapidity, and when collecting them for her young, places each fly as she catches it in the corner of her mouth till there is a considerable accumulation of them. When she opens her mouth to seize a fly, one expects to see the others fall from it; but this never happens. I have also observed that, when a wagtail has a young cuckoo to feed, she collects a larger number of flies in her mouth than one who is engaged in supporting her own young. When this bird has collected a sufficient number of flies for a meal for her young, she gives two or three chirps as she approaches her nest, which her brood understand, and they are ready with open mouths to receive the food. The young cuckoo understands these chirps, and I have seen him eagerly prepare himself for the approach of his foster-mother long before he could see her.

I have never observed that the swallow, in hawking for flies for her young, accumulates them by the side of her mouth as the wagtail does. One hears the snap of her beak when she takes a fly, and it is curious to see the instinct which prevents her seizing a wasp during her rapid flight. Swallows are indefatigable in providing food for their young while they are in the nest; but should the nest by any accident be brought to the ground before the brood are

able to fly, the old birds take no further notice of them: they are left to crawl about and die. The old birds are so much on the wing, that they probably never think of looking for their young on the ground, where indeed they so seldom alight themselves. The affection which birds show to their young is very great, and continues in many instances till the next breeding season. Our common hen will keep her last brood by her side till she lays again, and I have observed that they roost next her during a whole winter after they are full grown. Her interest in them does not cease till the following spring, when she has a fresh charge to bring up. An instance of this care and affection is mentioned by Mr. Graves in his British Ornithology. It occurred in the case of a pair of sparrows that had built their nest in a wall contiguous to his residence.

'Having noticed,' he says, 'that the parent birds 'continued to bring food to the nest for some months 'after the brood had left it, we had the curiosity to 'place a ladder against the wall for the purpose of 'ascertaining the cause, when to our surprise we 'found a full-grown bird in the nest, which had got 'its leg completely entangled in some thread which 'had formed part of the nest, in such a manner as to 'entirely prevent it leaving the nest. Wishing to 'see how long the industry of the old birds would be 'extended in behalf of their imprisoned offspring, we 'left the bird and nest in the state we found it, and 'observed that the parent birds continued to supply 'food during the whole of the autumn and some part

'of the winter months; but the weather setting in 'very severe soon after Christmas, fearing the seve- 'rity of the weather would occasion the death of the 'imprisoned bird, we disengaged its leg, and in a day 'or two it accompanied the old ones in search of 'food; but they continued to feed it till the month 'of March, and during the whole time they all nestled 'in the same spot.'

Some birds sit so close on their eggs, that no approach of danger can induce them to quit their nest. The ingenious author of the Natural History of Selborne gives a very interesting anecdote of this in the case of a raven. 'In the centre of a grove there 'stood an oak, which, though shapely and tall on the 'whole, bulged out into a large excrescence about 'the middle of the stem. On this a pair of ravens 'had fixed their residence for such a series of years, 'that the oak was distinguished by the title of the 'raven-tree. Many were the attempts of the neigh- 'bouring youth to get at this eyrie: the difficulty 'whetted their inclinations, and each was ambitious 'of surmounting the arduous task. But when they 'arrived at the swelling, it jutted out so in their way, 'and was so far beyond their grasp, that the most 'daring lads were awed, and acknowledged the un- 'dertaking to be too hazardous. So the ravens built 'on, nest upon nest, in perfect security, till the fatal 'day arrived in which the wood was to be levelled. 'It was in the month of February, when those birds 'usually sit. The saw was applied to the butt, the 'wedges were inserted into the opening, the woods

'echoed to the heavy blows of the beetle or mallet, 'the tree nodded to its fall; but still the dam sat on. 'At last, when it gave way, the bird was flung from 'her nest; and, though her parental affection de-'served a better fate, was whipped down by the twigs, 'which brought her dead to the ground.'

It is not easy to account for the variation we sometimes perceive in the plumage of birds of the same species. I have observed a rook with one white wing during the last three years in the rookery in Hampton-Court Park; and I saw a sparrow nearly white amongst a flock of those birds at West Molesey. A linnet was shot and brought to me from the same place, which was beautifully mottled with white and and brown. Some years ago I was shown some white blackbirds in the grounds of a nobleman at Blackheath, which had bred there; and what showed this was not an accidental circumstance, they produced young of the same colour as themselves.

Partridges manifest great caution in choosing the place where they intend having their nest I have observed them to remain near the same spot for some weeks before the female lays her eggs; and if in the mean time they should discover the retreat of any animal in the neighbourhood, who is likely to be injurious to them, they shift their quarters. I have generally noticed that partridges lodge themselves at night near the middle of a field, probably being aware that they are safer in this situation from the attacks of stoats or weasels, than if they got nearer hedges, under the roots or banks of which these animals con-

ceal themselves. Some birds utter a peculiarly plaintive cry on the approach of danger. Even when they are concealed in the midst of a thick hedge they give warning, should any marauder in the shape of a cat or a weasel come near them. There is something in this mournful cry which cannot be misunderstood. The blackbird and thrush have it, but I have more generally observed it in the hedge-sparrow and red-breast.

There is something extremely amusing in watching the motions of a family of the long-tailed titmouse, or, indeed, of any of the Parus tribe. The parents and their young, which are very numerous, associate together from the time they leave their nest to the following spring. The incessant call they make seems intended to keep the whole family together in their passage through a wood, or amongst thick shrubs, in search of insects. Their motions and flight are very quick; and there is a cheerfulness and rapidity in all they do which is very pleasing. The complacency in the notes of young birds, while they are receiving food from the old ones, always gives me the impression that it arises from gratitude and affection. Even after the parent bird has departed in search of more food, this little call of love is continued with a flutter of the wings, which is made with more rapidity as the note and flight of the mother are heard on her return. These little blandishments may be seen more particularly during the first few days after the young birds have left the nest. While they are in it, they preserve a greater degree

of silence; and if any one approaches their nest, they squeeze into it, and keep themselves as flat as possible. This early instinct in apprehending danger is peculiar to the young of almost all wild animals; while the young of many of our domestic animals seem fearless of danger from their very birth. Can we doubt, but that animals are indebted for this extraordinary apprehension of the danger which threatens them to an instinct implanted in them as their safeguard by a kind and beneficent Providence? If animals had escaped from some particular danger, they would naturally avoid it in future: but we see that they endeavour to shun it in cases where they have had no previous intimation of it. A young duck, as soon as it has escaped from its shell, will swim into a pond, and catch gnats and flies; but give it a wasp, and it immediately avoids an insect the sting of which would probably kill it. Young chickens, also, as soon as they are hatched, will take shelter under their mother's wings at the sight of a distant hawk in the air, while they show no dread at a turkey or goose, however nearly they may approach them, though the latter have much the most formidable appearance.

Amongst the wild cattle which are still found in two or three of our parks in England, the young calves show considerable ferocity as soon as they are dropped; while the calves of our domestic cows are remarkable for their gentleness, and allow themselves

to be handled without exhibiting any signs of fear or wildness. I have also observed that the kittens of a cat who prowls about our barns and outhouses, and avoids observation, are much more fierce in their nature than the young of a cat who has become familiar with us by kindness, and accustomed herself to live much in the house. The parents' ferocity or tameness seem to be imparted to the young with life; and this I believe will be found to be the case with most animals.

I always listen with great attention to the observations made by country people on the peculiar habits of some animals. Thus I have heard them say, that when the swans on the river Thames fly against the stream it is sure to rain, and that this will be the case when rooks are more than usually clamorous on their return to their roosting-places in an evening. The scream of a peacock, and the peevish incessant cry of the guinea-fowl, are also fatal prognostications. The loud and discordant note of the wood-pecker is a sign of change of weather, and it is therefore in some places called the rain-fowl.

Should the deer in Hampton Court Park collect on a small mound there, I am assured that it portends an approaching storm; and the same is said of pigs, when they hurry home to their sty, making a great outcry.

There is something very delightful in the sudden appearance of flowers and insects in an early spring, after a long continuance of frost and snow.

——'Daffodils,
'That come before the swallow dares, and take
'The winds of March with beauty, violets dim,
'But sweeter than the lids of Juno's eyes,
'Or Cytherea's breath.'

Insects seem to leave their retreats and burst all at once into life. Insignificant as they may appear to us, they are all designed, in the order of nature, to answer some good and useful purpose. Even our very health, in some instances, depends on them, and many of our actual enjoyments. They supply food for our pretty songsters, and enliven the whole creation. They form a variety and interest in the scenes of life; and to those who are curious in examining their habits and economy, they afford an endless source of harmless and instructive amusement.

'With eye up-raised his master's looks to scan,
'The joy—the solace—and the aid of man;
'The rich man's guardian, and the poor man's friend,
'The only being faithful to the end.' ANON.

I DELIGHT in hearing well authenticated anecdotes of the sagacity and attachment of dogs. Their fidelity to man is so conspicuous, and they are so capable of shewing great and extraordinary instances of noble and disinterested affection, added to an instinct which is nearly allied to reason, that I shall devote a short space in relating some well attested facts concerning them.

One of these was recently communicated to me by the late Captain Gooch, one of the elder brethren of the Trinity House. He informed me that Captain Dance, who as commodore of a fleet of Indiamen, so gallantly repelled the attack of a French squadron under Admiral Linois during the late war, brought with him from China a native dog. After his ship was at her moorings in the Thames, he ordered a chaise, had the dog put in it, and drove with it to his house near Leatherhead in Surrey, where Bonner, the name of the dog, was safely made over to Captain Dance's sisters. The next night, as the Indiaman was getting under-weigh for the docks, one of the sailors heard a loud barking amongst the rushes on the Kent side of the river, and immediately exclaimed that

it was Bonner's bark. This was declared by his shipmates to be impossible, as the captain had taken him away the day before. The man, however, persisting that he was correct, a boat was at length lowered, and on arriving at the side of the river, Bonner was discovered among the rushes and was taken on board. Here was an instance of a dog being brought to a strange country, and taken in a carriage to a distance of some twenty or twenty-five miles from the ship he had just left, finding his way back to it through a country essentially different from his own —a different soil and climate—different objects, and different people. By what instinct he was enabled to do this it is not easy to define. I can only give the fact as I received it, from the most respectable authority. Captain Gooch assured me that he had often heard Captain Dance relate it as an extraordinary instance of sagacity in his dog.

I heard Mr. Barry, a South American merchant of great respectability, relate the following anecdote. He said, that while travelling across the Andes with a guide they lost their way, and after wandering about a great length of time in uncertainty where they were, at last espied a hut at some distance from them. On approaching it they were attacked by two dogs, who barked violently, and opposed their entrance to the hut. They were obliged to throw stones at them, and thus drove them away. Getting near the hut, they heard a voice in Spanish begging them not to hurt the dogs. On entering it they found a man in the feeblest state

of old age, who assured Mr. Barry that he should have been starved to death had not his dogs gone out hunting, and regularly brought him part of what they caught. He was a slave, who had made his escape and sheltered himself in this secluded spot.

A gentleman, residing in the neighbourhood of Blackheath, had a favourite dog who was his constant companion. He was an old bachelor, and his sister resided with him. Before leaving his dining-room he was in the habit of locking up his wine, and then threw the bunch of keys on the floor, which was taken up by the dog, who followed his master with the keys in his mouth to join his sister in the drawing-room. This practice was followed till the old gentleman's death. The dog then appeared miserable, and in order to let him follow his old custom the wine was locked up as usual, and the keys thrown on the floor. But neither then, or at any subsequent time, would the dog be induced to take them up. It was impossible for this poor animal to shew his love for his deceased master in a more marked and affecting manner.

Let me here record an instance of strong attachment shewn me by my favourite old dog 'Trim.' He was a rough Scotch terrier; he loved me most faithfully, and showed it in a thousand ways. He slept under my bed at night—awoke me by jumping upon it at exactly the same time every morning, and accompanied me wherever I went. He was moreover somewhat of a pickle, and ready for any mischief. I think I now see his honest countenance

watching me as I was preparing to take my walk; and if I had my gun, hunting every hedge-row that I passed along in search of a rabbit. Having occasion to be absent from home for some time, I left him behind me. It was the first time we had been separated, and my poor dog was miserable. He wandered about the premises, and got under my bed as usual, but my room being occupied by some one else, he was driven from it, and from that time was seen no more in the house. The last I heard of him was from the post-boy, who had driven me when I left my residence. He had found out and followed the chaise many miles, barking now and then, and looking up to it, supposing, no doubt, that I was in it. When the chaise stopped, and the door was opened, my faithful dog jumped into it, but not finding me he disappeared, and I never could hear of him afterwards. My own conviction is that he again set forth in a fruitless search of his master, and died untimely. Poor Trim! many years have elapsed since I lost him, but I shall never forget his attachment to me, and have a little melancholy satisfaction in recording this instance of his fidelity.

'When some proud son of man returns to earth,
'Unknown to glory, but upheld by birth;
'The sculptor's art exhausts the pomp of woe,
'And storied urns record who rests below;
'But the poor dog, in life the firmest friend,
'The first to welcome, foremost to defend;
'Whose honest heart is still his master's own,
'Who labours, fights, lives, breathes for him alone

'Unhonour'd falls, unnoticed all his worth,
'Denied in heav'n the soul he held on earth.' BYRON.

Dogs, in addition to their attachment and fidelity to man, shew a degree of sense on some occasions which is quite extraordinary. I knew a dog who never barked or shewed any degree of restlessness when his master's family were at home, but when the house was left to the care of one servant only, the dog's vigilance was extreme, and he barked at the slightest noise. This is very much the case with a good yard-dog. He is always on the watch, the least noise excites his attention, but he only gives the alarm when it is necessary to do so, and when he does it is in a different tone to that with which he receives his master after the latter has been some time absent.

A gentleman had a remarkably fine Newfoundland dog, so innately gallant and polite, that, unless ordered to remain at home, he invariably, unbidden, preceded his wife and sisters when they walked abroad if they were unattended by a gentleman. He compelled every person he met, by a significant look or growl, to make way for them; but, when a gentleman accompanied them, he always walked behind. With him, by night or by day, they were safe, for his courage was equal to his sagacity, and on the slightest signal from them of alarm, he was ready to defend them. His death was a melancholy one, and he was regretted by all who knew him. He was poisoned by drinking some water which had been poured into a vessel having white paint in it.

A friend of mine took a Newfoundland dog and a small spaniel into a boat with him, and when he got into the middle of the river near one of the locks, not far from Hampton Court, he turned them into the water. They swam different ways, but the spaniel got into the current, and after struggling some time, was in great danger of being drowned. As soon as the Newfoundland dog perceived the predicament his companion was in, he swam to his assistance, took him in his mouth, and brought him safe to the shore.

The great sagacity and intelligence of the sheep dogs that come to London must have been noticed by many. I have seen one of them run over the backs of a flock of sheep in a crowded street to get at the further end of them in order to turn them, and this on the slightest signal from his master. When I had the pleasure of meeting Mr. Hogg, the Ettrick shepherd, in London, he was kind enough to relate some interesting anecdotes in Natural History to me. Although the following instance of the sagacity of one of his dogs was not one of the anecdotes alluded to, the accuracy of it may, I believe, be depended on.

During the time in which lambs are weaned, the Ettrick Shepherd had seven hundred of them under his care. As is sometimes the case, especially at that time, they broke away in the middle of the night, and scampered off in three different parties across the hills, in spite of all the shepherd and his assistant could do to keep them together. 'Sirrah,' cried the shepherd, in great affliction (addressing his dog,)

'my man, they're a' awa.' The night was so dark that he did not see the dog, but the faithful animal had heard his master's words, and without more ado he silently set off in quest of the flock. Meanwhile, the shepherd and his companion spent the night in scouring the hills for miles round, but could see nothing of the flock or the dog. On their way home in the morning they discovered a body of lambs at the bottom of a deep ravine called the Flesh Cleuch, and the dog standing in front of them looking all around for some relief, but still standing true to his charge. Not one lamb of the whole flock was wanting.'

The following instance of the fidelity of a farmer's dog is perfectly well authenticated, and will, I am sure, be read with interest. It is extracted from the Sportsman's Cabinet, a work containing many curious particulars on the canine race.

'Mr. Henry Hawkes, a farmer residing at Halling in Kent, was late one evening at Maidstone market. On returning at night with his dog, who was usually at his heels, he again stopped at Aylesford, and as is too frequently the case upon such occasions he drank immoderately, and left the place in a state of intoxication. Having passed the village of Newheed in safety, he took his way over Snodland Brook, in the best season of the year a very dangerous road for a drunken man; the whole face of the country was covered with a deep snow and the frost intense; he had however proceeded in safety till he came to the Willow Walk, within half a mile of the church, when by a sudden stagger he quitted

'the path and passed over a ditch on his right hand. 'Not apprehensive he was going astray, he took to- 'wards the river, but having a high bank to mount, 'and being nearly exhausted with wandering and the 'effect of the liquor, he was most fortunately pre- 'vented from rising the mound, or he certainly must 'have precipitated himself (as it was near high water) 'into the Medway. At this moment, completely 'overcome, he fell among the snow in one of the 'coldest nights ever known, turning upon his back; 'he was soon overpowered with either sleep or cold, 'when his faithful dependant, who had closely at- 'tended to every step, scratched away the snow so 'as to throw up a sort of protecting wall around his 'helpless master, then mounting upon the exposed 'body, rolled himself round and laid upon his mas- 'ter's bosom, for which his shaggy coat proved a 'most seasonable covering and eventual protection 'during the dreadful severity of the night, the snow 'falling all the time The following morning a per- 'son who was out with his gun, in expectation of 'falling in with some sort of wild fowl, perceiving an 'appearance rather uncommon, ventured to approach 'the spot; upon his coming up the dog got off the 'body, and after repeatedly shaking himself to get 'disentangled from the accumulated snow, encou- 'raged the sportsman (a Mr. Finch,) by actions of 'the most significant nature to come near the side of 'his master Upon wiping away the icy incrustation 'from the face, the countenance was immediately re- 'collected; but the frame appearing lifeless, assist-

'ance was procured to convey it to the first house 'upon the skirts of the village, when a pulsation 'being observed, every possible means were instantly 'adopted to promote his recovery.

'In the course of a short time the farmer was 'sufficiently restored to relate his own story as al- 'ready recited; and in gratitude for his miraculous 'escape, ordered a silver collar to be made for his 'friendly protector, as a perpetual remembrancer of 'the transaction. A gentleman of the faculty in the 'neighbourhood hearing of the circumstance, and 'finding it so well authenticated, immediately made 'him an offer of ten guineas for the dog, which the 'grateful farmer refused, exultingly adding "that so 'long as he had a bone to his meat, or a crust to his 'bread, he would divide it with the faithful friend 'who had preserved his life:" and this he did in a 'perfect conviction that the warmth of the dog in 'covering the most vital part, had continued the cir- 'culation, and prevented a total stagnation of the 'blood by the frigidity of the elements.'

Such is the acuteness of observation in some dogs, that I have seen a pointer which never chased his game on any other occasion, follow a partridge which was wounded in a covey when I could not perceive it myself, and bring it back to me in his mouth after it had fled over two or three fields.

The following instance of sagacity in a dog I received from good authority. Two small terriers were in the habit of leaving their home together and hunting rabbits in a warren at some distance from it.

One of them got so far into a rabbit-burrow that he could not extricate himself. His companion returned to the house, and by whining, and using many significant gestures, attracted the notice of his master. When he had done this, he ran a short way forward and then returned; and after repeating this some time, his master was induced to follow him. The dog led him to the rabbit-burrow, where he began to bark and scratch violently; and, on procuring a spade, the other dog was dug out.

A relation of mine had a terrier, which he was sometimes in the habit of confining. He frequently missed the dog's collar, and at last discovered that the animal carried it off in its mouth in order to hide it, being aware that it was one of the instruments of its confinement.*

It is difficult to account for the extraordinary in-

* This, perhaps, is not so extraordinary as what I have frequently observed a buffalo to do at the Zoological Farm, on Kingston Hill. This animal is particularly ferocious, and in order to tame it, when necessary, a strong iron ring has been passed through the cartilage of his nose, having a chain about two feet long attached to it. At the other end of the chain there is another ring, three or four inches in diameter. In grazing the buffalo must have put his feet on this ring, and in raising his head the jerk would have produced considerable pain. In order to avoid this, the animal has had the sense to put his horn through the lower ring, and thus avoid the inconvenience he was put to. I have seen him do this in a very deliberate manner, putting his head on one side while he got his horn through the ring, and then shaking his head till the ring rested at the bottom of the horn. It may at any time be seen in that position.

stinct which some dogs derive from their parents. One of the fine deer hounds in Richmond Park, instead of seizing the deer by the ear or neck, as is usually the case when they stand at bay, always takes it by the skin of the forehead, between the antlers—a difficult place to hold it by, and one of peculiar danger to the dog. On slipping a puppy of this particular hound at a deer for the first time, when it was only nine or ten months old, it immediately seized the deer when brought to bay in the same manner its mother had done, and has continued to do so ever since.

The instinct which animals possess of finding their way back to a place, perhaps many hundreds of miles from whence they had set off, without any previous acquaintance with the country, is one of the most curious facts in Natural History. That it is not done by scent alone is sufficiently evident, and this is shewn by the fact I have already related of the dog brought from China by Captain Dance.

Professor Gall mentions an instance of a dog having been taken to England from Vienna, and which escaping from his new owner, went to the port, contrived to get on board a vessel, and took his course to Vienna. They must, therefore, be endowed with some unexplained instinct which leads them to the point to which they wish to arrive. This faculty is also possessed by savages, who certainly are endowed with the same instinct, which migratory birds and some animals possess, of finding their way in a straight line from one point to another at a great

distance from each other. A gentleman, who resided some years in Australia, informed me that having occasion to go a considerable distance into the interior of that country, he lost his way, and should have been unable to return had he not had one of the natives with him. This man who had never before been more than 15 or 20 miles from his own district for fear of hostile tribes, with whom his own was in perpetual warfare, conducted him in an undeviating line of more than 100 miles to the point he wished to arrive at. I was assured that he could have done the same blindfold, as he travelled as accurately when the sun was obscured as when it was visible. The gentleman assured me that this man was not assisted in his journey by any observations on the bark of trees, but that he did it from mere instinct, in the same way that a carrier pigeon will find its way to the dove cot, many miles from where it was turned loose.

'Histories are more full of examples of the fidelity of dogs 'than of friends.' POPE.

THE more we examine the character of these noble animals, the more must we admire their courage, their fidelity, their sense, and almost their reason. I have in consequence of my former anecdotes of dogs had several others sent me, and I now transcribe them as I find them in my note-book, merely adding that those who are fond of dogs will, I am sure, peruse them with pleasure, and those who are not so will find reason to admire their noble and rational qualities.

A gentleman of my acquaintance witnessed the following occurrence. He was shooting one day by the side of a hill, attended by a keeper, and shot at and wounded a hare, which ran through one of several holes made at the bottom of a stone-wall. The keeper sent a favourite old retriever after the hare. The dog jumped over the wall, caught the hare, and returned with it in his mouth to the wall, but after several attempts, was unable to jump back again with his additional load. Giving up his ineffectual efforts, the dog was seen to push the hare with his nose as far as he could through one of the holes at the bottom of the wall. He then leapt over it, dragged the hare through the hole on the other side, and brought it to his master. From the high spot on

which the parties stood, they were able to witness the whole of the dog's proceedings, which certainly appear to have been caused by some faculty beyond mere instinct.

A gentleman, now residing in London, while travelling on the outside of one of the north mails, was a witness of the interesting fact I am about to relate. It was a dark night, and as the mail was travelling at the usual rate, a dog barked incessantly before the leaders, and continued to do so for some time, jumping up to the heads of the horses. The coachman, fearful of some accident, pulled up, and the guard got down for the purpose of driving the animal away. The dog, however, ran a little way before the guard, and then returned to him, making use of such peculiar gestures, that he was induced to take out one of the lamps and then follow the dog. After doing so for about a hundred yards, he found a farmer lying drunk across the road, and his horse grazing by the side of it. But for this extraordinary sagacity, and affection of the dog for his master, the coach would most probably have been driven over the body of the sleeping man.

A drunken rat-catcher of the name of Tindesley, well known at Hampton Court and its neighbourhood, was always followed by a large, rough, one-eyed, half-starved looking terrier dog. The rat-catcher and his dog were inseparable companions, and one looked just as wretched as the other. In May last, (1834) the rat-catcher was found dead in a ditch near Thames Ditton. He must have fallen into it when he was

drunk. When he was discovered, the dog was seen endeavouring with all his might, to drag the body out of the ditch, and in his efforts he had torn the coat from the shoulders of his master. The dog had saved his life on two former occasions when he was nearly similarly circumstanced.

An old friend of mine (Major M.) had a very sagacious pointer, which was kept in a kennel with several other dogs. His game-keeper having one day gone into the kennel, dropped his watch by some accident. On leaving the place, he fastened the gate as usual, but had not gone far from it when he heard it rattled very much; on looking round he saw his favourite pointer standing with her fore-paws against it, and shaking it, evidently for the purpose of attracting his attention. On going up to her, he found her with his watch in her mouth, which she restored to him with much seeming delight.

I recollect calling upon an acquaintance in London, who was in the habit of reading in bed; he shewed me his bed-curtains much burnt and also one of the sheets. The night before he had been reading the newspaper in bed, with a candle near him, and had fallen asleep. A favourite terrier always slept in the room with him, and he was awoke by the dog scratching him violently with his fore-feet; thus, his life was probably saved, for he was in time to call for assistance and prevent the house being burnt.

A friend of mine while shooting wild fowl with his brother, was attended by a sagacious Newfoundland dog; in getting near some reeds by the side of a

river, they threw down their hats, and crept to the side of the water where they fired. They soon afterwards sent the dog for their hats, one of which was smaller than the other. After several attempts to bring them both together in his mouth, the dog at last placed the smaller hat in the larger one, pressed it down with his foot, and thus brought them both together. This fact need not be doubted. These individuals have both at different times assured me of its truth. I knew an instance somewhat similar. A spaniel was endeavouring to bring a dead hare to his master. After several ineffectual efforts to carry it in his mouth or to drag it along, he contrived to get all the feet of the hare in his mouth, and in this way conveyed it to his master.

A gentleman in Sussex, at whose hospitable house I have passed some pleasant days, informed me that he once had an old spaniel, which was his constant companion both in the house, and when he was shooting. If the morning was rainy, the dog remained perfectly quiet; if it was fine, he became restless at the usual time for his master to go out, and would try to draw him out by the flap of his coat. If his master intended to go out shooting he opened the house-door, when the dog immediately ran to the keeper's lodge, which was at a considerable distance from the house. This was the signal for the keeper to repair to it with his dogs, and the old spaniel then ran back, well contented, to his master, who certainly deserved his affection.

A gentleman in Nottinghamshire has a pointer

dog very eager at all times to go out shooting with him. His master is a bad shot, and when he has missed his game several times together, and which the dog has had the trouble of finding for him, the animal gets provoked, and has several times attacked his master in consequence in a manner not to be mistaken. This is very much the case with my old terrier, Peter. He accompanies me when I am trolling, watches every throw with much anxiety, and shows great impatience and some degree of anger, if I am a long time without taking a fish; when I do, he appears delighted.

It is extraordinary at what a distance from land dogs on board a ship are conscious of the approach to it. I have been assured, that long before the land is visible to any one on board, dogs will evince a restlessness and change of manner which cannot be mistaken.

The following amusing account of a dog has been sent me by a gentleman of my acquaintance, and I give it in his own words.

'We had started from Geneva, on our way to 'Basle, when we discovered that a dog was follow- 'ing us. We found on enquiry that it did not belong 'to the *voiturier*, and we then concluded that it 'would not be our companion for any considerable 'distance, but would take to the right or left at some 'turning, and so go to his home. This, however, 'was not the case, for he continued with our car- 'riage through the whole of the day's journey. 'When we stopped for the night, by close attend-

'ance on us as we alighted, and sundry wags of the 'tail, looking up into our faces, he installed himself 'in our good graces, and claimed to be enrolled a 'regular member of the *cortége*. "Give that poor 'dog a good supper, for he has followed us all day," 'was the direction to the people of the inn; and I 'took care to see it obeyed. This affair of the dog 'furnished conversation after our dinner. We were 'unanimous in the conviction that we had done 'nothing to entice the animal, and washed our hands 'of any intention to steal him. We concluded he 'had lost his master, and, as all well educated and 'discriminating dogs will do in such a dilemma, that 'he had adopted other protectors, and had shown his 'good sense and taste in the selection. It was clear, 'therefore, that we were bound to take care of him.

'He was a stout dog, with a cross of the mastiff in him; an able-bodied trudger, well formed for scuffling in a market-place. He was a dog also of much self-possession. In our transits through the villages he paid but little attention to the curs which now and then attacked him. He followed us to Basle; we assigned to him the name of Carlo, which he had already learned to answer readily; we became quite attached to him, and the affection appeared to be mutual. At Basle we told the innkeeper the story, and added that we had now nothing to do but to take the dog to England with us as we could not shake him off. The landlord smiled. "Why," said I, "is it your dog?' "No," said he. "Does he belong to any one that you know?" "No,"

'replied the host. "Why do you smile then?" ' "Vous verrez." "Well, but explain." "Well then," 'said the landlord, "this dog, which belongs to no 'one, is in the habit of attaching himself to tra- 'vellers passing between this place and Geneva. 'He has often been at my house before. I know 'the dog well. Be assured he will not go further 'with you." We smiled in our turn: the dog's 'affection was so very marked. "Il y trouve son 'compte," said the landlord—" c'est son gagne- 'pain!" We smiled again. "Encore," resumed 'the landlord, "vous verrez."

'The next morning the dog was about as usual. 'He came to us, and received a double portion of 'caresses for past services, also some food in consi- 'sideration of the long trot before him. The horses 'were to—we sprang into the carriage, and off we 'started. Hie Carlo! Carlo—hie Carlo! Not a leg 'did he wag, but only his tail. Carlo,—Carlo— 'Carlo!—The deuce a bit did he stir. He stood 'watching us with his eyes for a few seconds, as we 'rolled along, and then turning round, walked lei- 'surely up the inn-yard! The confounded landlord 'was standing at his door laughing. The devil take 'the dog, said I—Carlo, Carlo!'

Every one has observed that dogs, before they lie down, turn themselves round and round several times. Those who have had an opportunity of witnessing the actions of animals in a wild state, know that they seek long grass for their beds, which they beat down and render more commodious by turning round in it

several times. It would appear, therefore, that the habit of our domestic dogs in this respect is derived from the nature of the same species in the wild state. This is a curious fact, and serves to prove how much the instinctive habits of wild animals are retained by their domesticated progeny.

The affection which dogs retain for their masters through a long period of time is well known. The following anecdote of faithful attachment was communicated to me by a gentleman well known as a diplomatist, and for those virtues which have been conspicuous both in his public and private life. He had a small terrier which was much attached to him. On leaving this country for America he placed the dog under the care of his sister, who resided in London. The dog at first was inconsolable, and could scarcely be persuaded to eat any thing. At the end of three years his owner returned, and upon knocking at the door of his sister's house, the dog knew his knock, ran down stairs with the utmost eagerness, fondled his master with the greatest affection, and when he was in the sitting-room, the faithful animal jumped upon the piano-forte that he might get as near to him as possible. The dog's attachment remained to the last moment of his life. He was taken ill, and was placed in his master's dressing-room, on one of his cloaks. When he could scarcely move, his kind protector met him endeavouring to crawl up stairs. He took him up in his arms, placed him on his cloak. when the dog gave him a look of affection which could not be mistaken and immediately died.

There can be no doubt, I think, that this affectionate animal in his endeavour to get up the steps to his master, was influenced by sensations of love and attachment which death alone could extinguish, and which the approach of death prompted him to shew. I delight in these testimonies of the affection of dogs to a kind master. They serve to prove what I have said elsewhere, that these animals were designed by an infinitely wise and good Being to be the companions and friends of man, clinging to him under every circumstance of poverty and distress. Their attachment, fidelity and sagacity should protect them from that ill usage to which they are so constantly subjected.

I am indebted to Lord Stowell for the following anecdote, and it is not amongst the least pleasing circumstances attending the publication of my 'Gleanings,' that they have afforded pleasure to that excellent nobleman.

Mr. Edward Cook, after having lived some time with his brother at Togsten in Northumberland, went to America, and took with him a pointer dog, which he lost soon afterwards while shooting in the woods near Baltimore.

Some time after, Mr. and Mrs. Cook, who continued to reside at Togsten, were alarmed at hearing a dog in the night. They admitted it into the house, and found that it was the same their brother had taken with him into America. The dog lived with them until his master returned home, when they mutually recognised each other. Mr. Cook was never

able to trace by what vessel the dog had left America, or in what part of England it had been landed. This anecdote confirms others which I have already mentioned relative to dogs finding their way back to this country from considerable distances.

An officer of a regiment of Hussars had a strong half bred bull-bitch. As he was sitting one night with some brother-officers in a room adjoining the mess-room, they heard a noise and on going to the mess-room door, they saw the dog dragging a table by one of its legs towards the fire. They stood still and watched her proceedings. After several violent efforts, she succeeded in getting the table near the fire. When she had done this, she dragged a great coat to the edge of the table, and then laid herself down upon it.

A Newfoundland bitch had suckled two puppies until they were able to take care of themselves. They were, however, constantly following her and disturbing her in order to be suckled when she had little or no milk to give them. She was confined in a shed which was separated from another by a wooden partition some feet high. Into this shed she conveyed her puppies and left them there while she returned to the other to enjoy a night's rest unmolested. This shews that the animal was capable of reflecting to a degree beyond what would have been the result of mere instinct.

Foxes, which are so nearly allied to dogs in their nature, appear to be endowed with their sense, if it may be so called. A gentleman, while wandering

along the banks of a lake in Italy, saw a fox creep through some rushes by the side of the lake, and get into the water, leaving nothing but his nose visible. The curiosity of the gentleman was excited, and getting quietly near the fox, he was soon convinced that the animal had made use of this plan to rid himself of fleas. The fleas must either be drowned, or they must creep for air to the nose of the fox. This latter appeared to be the case, for every now and then he was observed to shake his head as if to get rid of his tormentors. After remaining in the water some length of time, he went away.

Mr. Poynder, the brother to the Treasurer of Christ's Hospital, brought home from Newfoundland a dog, a native of that country. This animal had established a strong claim on his master's affection, from the circumstance of his having twice saved his life by his sagacity in finding the road home, when Mr. Poynder had lost his way in snowstorms, many miles from any shelter. He had also, swam more than three miles to gain the ship after his master had embarked for England, and determined to leave the animal to the care of friends at Newfoundland. Mr. Poynder landed at Blackwall and took the dog in a coach to his father's house at Clapham. He was there placed in a stable, which he did not leave until the second day after his arrival, when he accompanied his master in a coach to Christ's Hospital. He left the coach in Newgate Street, and proceeded through the passage leading to the treasurer's house; not being able to gain admittance at

the garden entrance, Mr. Poynder went round to the front door, and thinks he left the dog at the garden entrance, for he did not recollect seeing him afterwards. In the hurry and excitement of meeting his friends, he for a few minutes forgot his dog, but the moment he recollected himself, he went in search of him. He was no where to be seen, and his master hastened to prepare his description and to offer a reward in the public papers. Early, however, next morning a letter arrived from the captain of the ship, in which Mr. Poynder had sailed from Newfoundland, informing him that the dog was safe on board, having swam to the vessel early on the previous day. By comparing the time on which he arrived, with that when he was missing, it appeared that he must have gone directly through the city from Christ's Hospital to Wapping, where he took to the water.

This instinctive faculty in animals of finding their way to a place over ground which they had not previously traversed, is possessed by them when they are very young. A puppy, six months old, of the Dane breed, and which had always been confined in the stable-yard, was given by the then possessor of Taplow Lodge in Berkshire to a gentleman in London. He conveyed him safely in his carriage to Hyde Park corner, where his master got out to speak to a friend, and the dog rushing out after him, eluded the pursuit of the servant and was lost. It happened that a gentleman, residing at Shenley near St. Alban's, had been some days at Taplow Lodge, and his horses were in the stable which the dog inhabited. They

arrived at Hyde Park corner at the time the dog was lost. He followed them, but was not observed by the coachman till within a mile or two of Shenley. The dog was well fed and placed in a warm stable, and his owner written to for the purpose of receiving his directions where to send him. The dog, however, made his escape, and before the letter was received, and about five or six hours after the stable-door was opened, he arrived at Taplow much exhausted. He must have gone straight across the country, as he was seen at Watford, Amersham, and Beaconsfield.

Lord Combermere's mother, (Lady Cotten) had a terrier named Viper, whose memory was so retentive that it was only necessary to repeat to him once the name of any of the numerous visitors at Combermere, and he never afterwards forgot it. Mrs. H. came on a visit there on a Saturday. Lady Combermere took the dog up in her arms and going up to Mrs. H. said 'Viper, this is Mrs. H.' She then took him to another newly arrived lady and said 'Viper this is Mrs. B.' and no further notice was taken. Next morning when they went to church, Viper was of the party. Lady Cotten put a prayer-book in his mouth and told him to take it to Mrs. H., which he did, and he then carried one to Mrs. B. at his mistress's order.

A gentleman in Denbighshire had a pointer and a Newfoundland dog. The former broke his leg, and was for some weeks confined to a kennel. The latter brought him a share of his bones, and would sit

for hours together by the side of his suffering companion.

One of the late chaplains of the embassy at Lisbon, brought to England with him a dog of the Newfoundland breed, so large that he was obliged to go by sea from Torquay to London, as no public coach would convey him. Though so immense in size, he was very gentle, but perfectly aware of his own powers. When his master was at the hotel at Torquay. the waiter spoke savagely to the dog, and tried to prevent him going where he wished. With one stroke of his paw he felled the waiter, and then passed on without doing him any further mischief. When his feet were dirty, he always entered the passage and ascended the stairs on tip-toe to avoid being detected, but when his feet were dry, he trod with all his weight and made as much noise as a pony. After being two days at the hotel, he wanted water. A gentleman, who related the circumstance, saw the dog go to the kitchen, take up a pail in his mouth, and carry it to the pump in the yard. He sat down by it till one of the servants came out, and then his gestures were so significant that the man pumped the pail full. When he had drank a sufficient quantity of water, he took up the pail again and carried it to the same place in the kitchen from whence he had taken it.

The passion of the late Lady Penrhyn for pugs was well known. Two of these, a mother and daughter, were in the eating-room of Penrhyn Castle during the morning call of a lady who partook of luncheon.

On bonnets and shawls being ordered for the purpose of taking a walk in the grounds, the oldest dog jumped on a chair and looked first at a cold fowl, and then at her daughter. The lady remarked to Lady Penrhyn that they certainly had a design on the tray. The bell was therefore rung, and a servant ordered to take it away. The instant the tray disappeared, the elder pug, who had previously played the agreeable with all her might to the visitor, snarled and flew at her, and during the whole walk, followed her growling and snapping at her heels whenever opportunity served. The dog certainly went through two or three links of inference, from the disappearance of the coveted spoil, to Lady Penrhyn's order, and from Lady Penrhyn's order to the remark made by her visitor.

A farmer in a village in Lincolnshire, who was an habitual drunkard, was always attended by a faithful dog. Upon leaving the ale-house, if his master was drunk, the dog always laid hold of the tail of his coat, and kept him from the sides of the ditches. The gentleman who gave me the information, assured me that he had repeatedly seen this faithful animal thus guarding his drunken master, and he had no doubt that he has often saved him from drowning.

Another farmer of the same place has a dog remarkable for his sagacity. If he accidentally or purposely leaves his gloves, stick, or handkerchief on any part of his farm during his morning's walk, and upon his return home, indicates his loss by certain signs to his dog, away the animal will go and find

and bring them. If any well dressed person goes into the farm-yard during the day, the dog takes no notice. If, however, a beggar enters the premises, the dog instantly goes to him, gently lays hold of his stick or clothes, and leads him to the door of the dwelling-house, and sees him safe off the premises under similar precautions. But in the night, the faithful animal will apprehend all persons without distinction, and never quits his hold until bidden by his master or mistress. The latter has a sister living on an adjoining farm. In order to facilitate the communication between the two houses, a single plank was thrown across a deep drain. The wife of the owner of the dog constantly and fearlessly entrusts her little children to his care, when they are anxious to visit their aunt. The animal halts the little tribe when he comes to the narrow bridge, and conducts them over it one by one, always taking firm hold of the child's garments behind, and when he has safely conducted one child, he returns for another. He then waits for their return and conveys them home in a similar manner.

There have been several instances recorded of dogs remaining for a length of time on the grave of their master. The following instance of this was communicated to me by an excellent clergyman, who assures me that he can vouch for the accuracy of the fact.

A gentleman died, leaving his favourite dog inconsolable. He stretched himself on his master's grave, and refused food. He was removed by force,

and carried into the house. He there moaned without ceasing, and would not eat; on being liberated, he returned instantly to the grave, and after a short time died there, as nothing could induce him to eat. There is something deeply affecting in such instances of faithful and affectionate attachment. In addition to which it may be mentioned that during the late Peninsular war, some instances occurred of dogs being found protecting the dead bodies of their masters from being devoured by beasts and birds of prey, watching over them with the utmost care and anxiety, and uttering howls which shewed alike their misery and affection.

I am indebted to the same kind correspondent for the following anecdote. A friend of his, residing in the neighbourhood of Lincoln, had a terrier dog who acquired a habit of hunting for hares by himself. He soon found that he was labouring in vain, for with all his hard running he never could catch one. His master often watched his endeavours to coax an excellent greyhound out of the yard. He at last effected his purpose. The good nose of the terrier soon enabled him to find a hare, which the greyhound killed and brought home. After that the two dogs became the most arrant poachers in the country, and were inseparable, till the halter ended their poaching, their friendship, and their lives.

A lady residing in the neighbourhood of London had a terrier who was much attached to her. She gave this dog to a friend who was going to reside at Bremen. In about a week after her friend had

reached his destination he wrote her word that the dog, after pining and appearing completely wretched, had disappeared, and that after a most active search, nothing could be heard of him. In less, however, than a fortnight, just as she was retiring to bed, a loud barking was heard under the window, and the lady said to her maid, 'if it were possible, I should say that is Viper's bark.' The noise continued, accompanied by pushing at the door. On opening it the dog sprang in, rather thinner than when it left home, but in good plight. How it got back could not be ascertained.

A dog, travelling with his master, was lost in the journey. They had crossed a wide lake the day before. The dog was seen to return to the ferry, to look earnestly across, and, as if sensible that the distance was too great to allow him to swim it, he was seen to go round the head of the lake some miles, to reach the opposite side from which he had embarked, and then proceed along the road by which he came.

The following is an instance of the sagacity of a dog, and of his capability of *measuring time,* if I may so call it.

There were two friends, one living in London and the other at Guildford. These friends were on terms of great intimacy; and for many years it had been the custom for the London family to pass the Christmas at Guildford, and their uniform practice was to arrive to dinner the day before Christmas-day, and to be accompanied by a large spaniel, who was as

great a favourite with the *visited*, as with the visitors. At the end of about seven years after this plan had been adhered to, the two families had an unfortunate misunderstanding, which occasioned an omission of the usual Christmas invitation. About an hour before dinner on the day before Christmas-day, the Guildford gentleman, standing at his window, exclaimed to his wife, 'Well, my dear, the W———'s have thought better of it, for I declare 'they are coming as usual, though we did not invite 'them; here comes Cæsar to announce them;' and the dog came trotting up to the door and was admitted as usual to the parlour. The lady of the house gave orders to prepare beds, dinner waited an hour, but no guests arrived. Cæsar, after staying the exact number of days he had been accustomed to, set off for home, and reached it in safety. The correspondence, which of necessity occurred, had the happy effect of renewing the intercourse of the estranged friends, and as long as Cæsar lived he paid the annual visit in company with his master and mistress.

A lady who resided at the Grove, near Wrexham, in Shropshire, had a favourite Scotch terrier who was much attached to her. She went to pay a visit at Chester (twelve miles distance), and as she was going to a house of great formality, and expected to pay many visits, she left Vixen at home in strict charge with the servants. The dog had never been a mile on the Chester road. The day after its mistress' arrival she attended a great dinner-party of

twenty people, and soon after they were seated, sundry growls announced a dog under the table. The lady of the house had a great antipathy to dogs, and her husband kicked at the intruder. Furious barking, and attempts to bite, succeeded; all was confusion, every body rose, and the servants, with brushes and sticks, endeavoured to drive out the intruder. Great, however, was its mistress's horror to find Vixen leap into her lap for shelter. It appeared that the dog had gnawn asunder the rope which confined it, broke a pane of glass in the stable-window, and made its escape. The servants of the house where she was visiting said that the dog had made its way into the passage, ran up into its mistress's bed-room, and not finding her there, had ran out again, and by some means obtained an entrance into the parlour of the house where she was to dine and had coiled itself up under the table.

In this instance it appears extraordinary, not only that the dog should have traced its mistress to Chester, where it had never been before, but that it should have discovered the house she was residing at, and been aware that she would eventually be found in the dining-room.

The following anecdote was communicated to me by a clergyman. The occurrence took place in a village in which he resided, and affords an interesting proof of the sagacity and attachment of a dog.

A farmer lived in a very lonely situation, his house being about two miles from any other dwelling. This

man was in the habit of drinking deeply, and would frequently, upon going to the market on a Tuesday, remain there drinking for several days; his family, therefore, did not sit up for him at night. On one occasion, however, when they had gone to bed, they were alarmed by the violent barking and howling of the house dog, a fine large animal that always rested in the kitchen. His mistress and two men servants got up and endeavoured to appease the dog. The animal rushed with the utmost violence against the door, and used every endeavour to get out, biting at the wood-work, and at the same time sending forth most piteous howlings. The people in the house apprehended an attack from robbers, but at length they opened the door, and the dog rushed out. Within the hour the voice of the master of the house was heard, and upon the door being opened he appeared attended by the dog. The account he gave was, that upon returning from market very drunk he fell from his horse into a deep dyke, and was wholly unable to get out, the water being up to his neck. He clung to the bank, and there held on till he was almost frozen to death (it was a cold night in January). He remembered crying out loudly for help, and when all hope had ceased, and he was nearly exhausted, he found himself seized by the collar of his coat by his noble and faithful dog, who succeeded, by his exertions, in extricating him from the ditch, and with great difficulty he reached home. He was about a mile from his house when he fell into the water, and the supposition is, that the dog, lying

with his head upon the ground (the earth being a conductor of sound) was enabled to hear the cries for help during the stillness of the night, and thus was the means of saving his master's life.

The following beautiful trait of surpassing fidelity has been communicated to Mr. Nicol by a gentleman well known by his writings on the fine arts.*

About the year 1786, when a boy, this gentleman passed a very agreeable day at the house of a man of taste and fortune near Boroughbridge, who had a Picture Gallery, in which among other things he remembers a very good set of copies of the Cartoons by Sir James Thornhill. After dinner, the party being then seated in an arbour, his attention was directed to a little cur dog that was much caressed by the lady of the house. He remarked 'that it was no beauty,' but was told that though not favoured in outward appearance it had 'that within which passeth 'show.' It had belonged to a poor woman, who lived in one of the cottages scattered outside the park, and who returning one day of the preceding winter from the market town, at some distance off, was overtaken by a snow-storm, in which she perished. The snow had drifted so deep that her body was not discovered until three days afterwards, when the dog was found lying close by its mistress and her basket of eatables *untouched* by the faithful animal. It was remembered, alas! too late, that he had been in the village on the evening of the snow-storm, and by importunate whinings and by pulling at their

* W. Y. Ottley, Esq.

clothes had in vain endeavoured to get some of the poor woman's neighbours to go with him to her assistance :—

'Let cavillers deny
'That brutes have reason ; sure 'tis something more:
' 'Tis Heaven directs, and stratagems inspires
'Beyond the short extent of human thought.'

SOMERVILLE.

I cannot conclude this notice of the faithfulness and intelligence of the canine race, without introducing in testimony of respect, the name of Sir Walter Scott, one of their greatest and sincerest friends. He never failed to interest his readers in their praise, he associated them with the heroes of many of his romantic tales, and he ever afforded to his own chosen and happy few, the warmth of his hearth, and the soft comfort of the rug.

It is with a melancholy pleasure that I insert, from the pen of one, who had he been spared to us might have enrolled his name among the first on the list of our British Poets and Philosophers, the following stanzas—

Written after visiting Melrose Abbey in company of Sir Walter Scott, August 1829.

I lived an hour in fair Melrose :
It was not when 'the pale moonlight'
Its magnifying charm bestows ;
Yet deem I that I 'viewed it right.
The wind-swept shadows fast career'd,
Like living things that joy'd or fear'd,
Adown the sunny Eildon Hill,
And the sweet winding Tweed the distance crowned well

I inly laugh'd to see that scene
   Wear such a countenance of youth,
Though many an age those hills were green
   And yonder river glided smooth,
Ere in these now disjointed walls
The Mother Church held festivals,
And full-voiced anthemings the while
Swelled from the choir, and lingered down the echoing aisle

I coveted that Abbey's doom;
   For if I thought the early flowers
Of our affection may not bloom,
   Like those green hills, through countless hours,
Grant me at least a tardy waning,
Some pleasure still in age's paining;
Though lines and forms must fade away,
Still may old Beauty share the empire of Decay.

But looking toward the grassy mound
   Where calm the Douglas chieftains lie,
Who, living, quiet never found,
   I straitway learnt a lesson high:
For there an old man sat serene,
And well I knew that thoughtful mien
Of him whose early lyre had thrown
Over these mouldring walls the magic of its tone.

Then ceased I from my envying state,
   And knew that aweless intellect
Hath power upon the ways of fate,
   And works through time and space uncheckt.
That minstrel of old chivalry
In the cold grave must come to be,
But his transmitted thoughts have part
In the collective mind, and never shall depart.

It was a comfort too to see
  Those dogs that from him ne'er would rove,
And always eyed him rev'rently,
  With glances of depending love
They know not of that eminence
Which marks him to my reasoning sense;
They know but that he is a man,
And still to them is kind, and glads them all he can.

And hence their quiet looks confiding,
  Hence grateful instincts seated deep,
By whose strong bond, were ill betiding,
  They'd risk their own his life to keep.
What joy to watch in lower creature
Such dawning of a moral nature,
And how (the rule all things obey)
They look to a higher mind to be their law and stay!

The Remains in Verse and Prose of Arthur Henry Hallam, 1834,
(privately printed.)

'I solitary court
'Th' inspiring breeze, and meditate the book
'Of nature ever open.'

THOMSON'S SEASONS.

I DELIGHT in viewing the varied shapes and appearances of old oaks. Some pollards even preserve a great irregularity, but there is one tree growing in the valley below Lady Stewart's Lodge in Richmond Park, which I often visit, and never without an encreased admiration of its beauty. It has more branches projecting from its stem than I have ever seen before, and they are so disposed, and spread themselves so high and so wide, that the effect of the whole is sufficient to strike any observer with admiration. It is surrounded by numerous thorns, and one may almost fancy that they have voluntarily placed themselves under the protection of this monarch of the park, and are regarding him with silent wonder, while they are receiving the benefit of his shelter :—

'His top branch over peer'd Jove's spreading tree,
'And kept low shrubs from winter's powerful wind.'

I find a great variety of birds in that part of the park in which my favourite oak flourishes. I was admiring it the other day, when I heard the five or

six successive taps which the spotted woodpecker, or witwall, (Picus Major) makes on a loose piece of decayed bark. I looked and expected to see the bird close to me. I could not however discover it, and then went to the next tree. The tapping continued, as before, apparently close to me, but still no bird was to be seen. I at last discovered it about fifty yards from the spot at which I first heard it, pursuing its operations without appearing to notice me. There seemed to be a sort of ventriloquism in the brisk and rapid blows of the bird, which made it appear nearer than it really was. It may not perhaps be generally known that these taps, against decayed bark, are for the purpose of frightening the woodlouse and other insects from their retreats, and the bird then feeds upon them.

In this part of the park I witness constant fights between the misseltoe thrush, (Turdus Viscivorus) or as I hear it called, the storm cock, and the magpie, and sometimes with the jackdaw. It also fights with the cuckoo. The missel defends itself, or rather its nest, with great courage, and I see it beat off the jackdaw.* These birds build in the holes of the pol-

* The missel-thrush is, by many, called the tyrant of the wood or orchard, which it selects for its abode. It will beat off the magpie, and prevent its building its nest in its immediate neighbourhood. The notes of the missel thrush are discordant and unmusical, although Mr. White calls it the earliest and largest of British song birds Its notes are to my ear, no otherwise acceptable, than being early in the new year the harbinger of more tuneful melody. It has been known to have young ones as late as August.

lards in the Park, and with so little attempt either at concealment or security, that I frequently can look into the holes during my rides in the park, and see the nests.

It is the great titmouse which sings those three cheerful notes which the country people say sounds like 'sit ye down.' They call the bird by that name. It is the marsh titmouse which makes two quaint sharp notes, which some people compare to the whetting of a sithe.* The goldfinch will sometimes flit past me and settle on some thistles growing near the park wall. They must assist in floating the down by pecking at the heads of the weed:—

> 'Wide o'er the thistly lawn, as swells the breeze,
> 'A whitening shower of vegetable down
> 'Amusive floats.'
>
> THOMSON.

The tree-creeper is a great favourite with me. It is a pretty little nimble bird, and runs up the bodies and boughs of trees like a mouse. It runs also on the lower side of the arms of trees with its back downwards. It stays with us all the winter. Mr. White has observed this property, and says that a pair of these birds built at one end of a house behind some loose plaster, and that they crept up the wall with the agility of a mouse, and seemed at all times to prefer climbing up steep surfaces.

The nightingale is heard in this part of the park. In the day time its song is of short continuance. At

* White. MSS.

night if another nightingale is singing near, the song is continued with great energy.

'The nightingale, that chaunteth all the springe,
'Whose warblinge notes throughout the wooddes are harde,
'Being kept in cage, she ceaseth for to singe
'And mournes, because her libertie is barde.'
GEFFREY WHITNEY'S EMBLEMES, 1586.

The nightingale is seldom heard to sing before the second week in April, and towards the end of May its song gets weaker and weaker.

The cuckoo at this time of the year is seen in every direction. It is sometimes mobbed by the wagtail, and some of the other fly-catcher tribe, not because he feeds upon them, but because he invades their retreats. I have often watched the cuckoo, but never yet saw it in the act of procuring its food, a circumstance which almost makes me think that he feeds late at night only, or very early in the morning, when moths are most abundant. That it is insectiverous there can be no doubt, though some naturalists have thought otherwise. The very circumstance of its depositing its egg in the nest only of those birds who feed their young with insects, is a strong proof of this. There is still a great mystery attached to the natural history of the cuckoo, and one would willingly, if possible, rescue it from the charge of a want of that natural affection which has been alledged against it. It has been stated that what has been said by a very antient and sublime writer, concerning the defect of natural affection in

the ostrich, may be applied to the cuckoo. It is now, however, pretty well ascertained that the ostrich only quits her eggs when the sun is so powerful that the additional warmth from her body would be detrimental to them. She, therefore, returns to them in the cool of the evening. I am persuaded that the more we enquire and search into the economy of nature, so far from finding any defects, we shall have more and more reason to be convinced that not only every bird, but every animal from the highest to the lowest in the scale of creation, is equally well adapted for the purpose for which it was intended. The chief object of a naturalist should be always to 'look 'through nature up to Nature's God,' and if we do so with a sincere desire to be benefitted by the survey, we shall have fresh cause for wonder and admiration, and find our minds more disposed to receive the good impressions which such a study must produce.

The cuckoo probably lays more than one egg, as I believe there are not many instances of any species of bird laying only one. Nature is too provident in the preservation of the different species to run any risks of their being exterminated, which might be the case if only one egg was deposited. Colonel Montagu dissected a cuckoo which had in her four or five eggs. Mr. Rennie thinks it lays a second time. Blumenbach says she lays six eggs in the spring from *time to time.* The cuckoo probably has the power of retarding its egg till it can find a proper nest to deposit it in. The egg, though larger than the egg of those birds in whose nest it is placed,

does not stand in need of a longer period of incubation. One of the keepers in Richmond Park lately shewed me a robin's nest very artfully concealed in the thatch of a shed close to his lodge. The thatch projected over the nest, which was in so confined a space that it seemed almost impossible for a cuckoo either to have discovered it, or to have got at it for the purpose of placing an egg in it. Yet the keeper assured me that he had frequently seen a cuckoo attempting to do so, and that he had as frequently driven it away, not liking to have the robin disturbed. I have often tried to account for this intrusion of the cuckoo into the nests of other birds. Its peculiar formation is not a sufficient reason. It is however the largest of insectivorous birds, with the exception of the honey buzzard, and naturally requires a great quantity of food. Like the swallow, therefore, one would think it would be constantly on the feed If the hen, however, sat on her own eggs, how could this large supply of food be obtained? While she was in search of it her eggs would be spoiled. Mr. White observes that cuckoos cannot be birds of prey as they have a weak bill and no talons.

Colonel Montagu states that this bird comes to us early in the spring, and almost invariably leaves us by the first of July. On the 18th of August, however, of this year (1832) a young cuckoo was caught in the green-house of the Stud-House in Hampton Court Park, which had just escaped from the nest of a wag-tail built in some ivy against a wall adjoining the green-house. A few days before I had observed

a cuckoo on the wing in Windsor Great Park, apparently in search of food.

I was amused this morning in watching some magpies catching butterflies, on my way homewards. There was a considerable length of wall, on the top of which five or six of these birds had perched, and from which they darted at the butterflies as they came near them, making a short and elegant circle, and alighting on the wall again to feed on their prey. As I approached them they got to a little further distance from me, still catching the butterflies as they fled from one place to another. I had not before been aware that magpies would feed on this description of insect.

Magpies are perhaps possessed of a degree of cunning not to be found in any other birds. I remember, when I was a boy, being much struck with an instance of this. I was constantly in the habit of firing at the birds who came to devour the berries of some mountain-ash trees standing on the lawn of the house where I was then residing. On the days in which I did this some magpies who had nests near the house were never seen on the lawn, but they were observed to hop fearlessly about it on Sundays when no reports of guns were ever heard at, or near, the place. They seemed in fact to be aware that, on that day, no danger need be apprehended. A friend of mine assured me that he had observed nearly the same circumstance in regard to some rooks, which

built near his house, as they came to spots on a Sunday* which they never frequented on any other day, a proof I think that animals are capable of *measuring* time, if I may call it so.

In order to corroborate this supposition still further, I will mention the following fact. A farmer had a favourite dog which accompanied him wherever he went except on a Sunday. On that day he never could be prevailed upon to leave the house. It happened, however, that there was a fast day, and on that occasion the farmer put on his best clothes and set off for church. The dog followed him, as usual, for a short distance, but seemed aware that something unusual in his master's former habits had taken place. He looked up in his face with considerable anxiety and distrust, and then slowly walked back to the house. The farmer called him, and the dog returned, but the village bells just then happening to ring for church, the dog seemed all at once to comprehend what was going forward, and returned to his home with the utmost expedition.

* There is an old saying in Kent—'As happy as a Rook on a Sunday.'

'*Affection* sublimes the passions, quickens the invention, 'and sharpens the sagacity of the brute creation.—Dams will 'throw themselves in the way of the greatest danger in order 'to avert it from their progeny.'—GILBERT WHITE.

I ALWAYS remark with peculiar interest the manner in which animals shew their affection for their young, and this in a variety of ways, the most timid of animals sometimes displaying the greatest courage. In riding about the Royal Parks I have frequently observed a doe come up to a dog, who has approached the lair where her fawn was concealed, and putting her feet together she has made a spring and alighted upon the dog, sometimes either maiming or killing it. A friend of mine observed an instance of this courage in a doe. He was walking in Hagley Park, Worcestershire, with a party of friends, when the discharge of a gamekeeper's gun reverberated through the trees and hills of that lovely scene. Soon afterwards a bleeding fawn bounded by, followed by the keeper's hound, and, in close pursuit of the hound, came a doe, the dam of the wounded fawn. Loss of blood, (which, trickling down copiously, marked the course of the poor alarmed creature) so weakened it that the dog soon brought it to the ground near the spot where the party stood observing the incident. The parent doe, losing all her natural timidity in affection for her offspring, attacked the hound with

the utmost ferocity, nor did the interference of the keeper intimidate her. Having terminated the sufferings of her young one with his knife, he carried it from the place: and when the dam, as if agitated by excessive grief, had surveyed the pool of blood, she followed the dead fawn and its destroyers, uttering a tremulous cry of maternal distress. This cry I often hear during the season for killing fawns, and it is one of peculiar agony.

An instance of this affection of beasts for their young recently occurred in Bushy Park. A cow, for some reason or other, was driven from that place and sold in Smithfield market, her calf being left at the head keeper's yard in the park. Early the next morning she was found at the gate of the yard, having made her way through all the intricacies and impediments of London and traversed twelve miles of road in order to get to her calf again. She must also have watched the opportunity when the park gates were opened to get through them.

A gentleman who had resided for several years in New South Wales related the following circumstance which he assured me he had frequently witnessed while hunting the kangaroo. It furnishes a strong proof of the affection of that animal for her young, while her own life has been placed in the most imminent danger. He informed me that when a female kangaroo has been hard pressed by dogs, he has seen her, while she has been making her bounds, put her fore-paws into her pouch, take a young one from it, and then throw it as far on one side as she pos-

sibly could out of the way of the dogs. But for this manœuvre her own life and that of her young one would have been sacrificed. By getting rid of the latter, she has frequently effected her escape and probably returned afterwards to seek for her young.

Such is the jealous care which a cat shews for her kittens that I have known one to remove a whole litter to the leads at the top of a house after they had been handled by a stranger, though she had previously allowed every inmate of the house to touch them.

It has been most beautifully and providentially ordered that the process of suckling their young is as pleasurable to the parent animal as it is essential to the support of the young. It is probably from a deficiency in the flow of milk that we now and then hear of animals destroying their infant progeny. Where there is a redundancy of it, and a painful sensation is produced, animals will allow the young of almost any other species to suck them. Thus a panther has been nourished by a bitch, and a puppy by a cat which had been deprived of her kittens. As the mammæ of animals thus become painful when over distended with milk, they are reminded of their helpless young, and visit them periodically at those times when sustenance is necessary for them.

The following fact connected with this subject is too curious to be omitted. It may excite a doubt in the minds of many persons, but it was so frequently witnessed by those on whose veracity I can depend, that I have no hesitation in relating it.

A cat belonging to Mr. Smith, the respectable bailiff and agent of the Earl of Lucan, at Laleham, is in the constant habit of taking her place on the rug before the parlour fire. She had been deprived of all her litter of kittens but one, and her milk probably incommoded her. I mention this in order to account in some degree for the following circumstance. One evening as the family were seated round the fire they observed a mouse make its way from the cupboard which was near the fire place, and lay itself down on the stomach of the cat, as a kitten would do when she is going to suck. Surprised at what they saw and afraid of disturbing the mouse, which appeared to be full grown, they did not immediately ascertain whether it was in the act of sucking or not. After remaining with the cat a considerable length of time it returned to the cupboard. These visits were repeated on several other occasions and were witnessed by many persons. The cat not only appeared to expect the mouse, but uttered that sort of greeting purr which the animal is so well known to make use of when she is visited by her kitten. The mouse had every appearance of being in the act of sucking the cat, but such was its vigilance that it retreated as soon as a hand was put out to take it up. When the cat, after being absent, returned to the room, her greeting call was made, and the mouse came to her. The attachment which existed between these two incongruous animals could not be mistaken, and it lasted some time. The fate of the mouse, like that of most pets, was a melancholy one. During

the absence of its nurse, a strange cat came into the room. The poor mouse, mistaking her for its old friend and protectress, ran out to meet her, and was immediately seized and slain before it could be rescued from her clutches. The grief of the foster-mother was extreme. On returning to the parlour she made her usual call, but no mouse came to meet her. She was restless and uneasy, went mewing about the house, and shewed her distress in the most marked manner. What rendered the anecdote I have been relating the more extraordinary is the fact of the cat being an excellent mouser and that during the time she was shewing so much fondness for the mouse, she was preying upon others with the utmost avidity. She is still alive.

A gentleman, now residing in Sussex, had a cat which shewed the greatest attachment for a young black-bird, which was given to her by a stable boy for food, a day or two after she had been deprived of her kittens. As she tended it with the greatest care, they became inseparable companions, and no mother could shew a greater fondness for her own offspring than she did for the bird. I could relate many instances of the same incongruity of attachment in animals: it will generally be found to arise either from those feelings of natural affection which every mother is possessed of, or else from that love of sociability, and dislike of being alone, which is possessed more or less by every created being.

The following is, perhaps, a still more extraordinary instance of the affection which one animal en-

tertained for another, not of its own species. Mr. Edwards, Lord Jersey's trainer at Newmarket, had the care of his Lordship's celebrated horse Glencoe, and a great affection existed between Glencoe and a large Newfoundland dog of Mr. Edwards'. The dog lived in the stable with the horse, and followed him when he was taken out to exercise. While this friendship existed, Glencoe was parted with. The dog was inconsolable, refused to eat, and it was supposed would håve died. On being brought from the stable by his master into his sitting room which had several portraits of horses hung against the wall, and that of Glencoe amongst the rest, the dog fixed his eyes on the likeness of his late companion. At first he began to wag his tail gently, but at last shewed the greatest excess of joy, jumped up to the picture, and it was evident that he had discovered the likeness of his absent friend. This anecdote may be thought extraordinary, but the celebrated Dr. Pearce, Bishop of Rochester, mentions one almost similar to it. He says that when he was one day visiting Sir Godfrey Kneller at his country seat at Whitton, near Hounslow, he carried him into his summer-house, where there was a whole-length picture of Lady Kneller, which was much damaged and scratched at the bottom. Upon the Bishop's expressing a curiosity to know how it became so injured, Sir Godfrey said it was owing to a favourite dog of Lady Kneller's, who, having been accustomed to lie in her lap, scratched the picture in that manner in order to be taken up. This made the Bishop mention that

Zeuxis, having painted a bunch of grapes upon a boy's head so naturally that a bird pecked at them, Sir Godfrey answered 'that if the boy had been 'painted as well as the grapes, the bird would not 'have ventured to peck at them.'

With prescient glance, protectors of their brood,
Each kens the coming peril.

ANON.

The movements, or motions, of some birds are very peculiar—those of the wag-tail, red-start and starling for instance. The cock-robin has a very 'gallant bearing' and shews much courage. The hedge-sparrow is very timid and peaceable. The wren is *fidgetty* and constantly on the move. The goldfinch always appears to be in a state of restlessness. The black-bird and song-thrush shew much attachment to their mates. The latter sometimes takes a rapid run on my lawn, and then stops and seems to consider what she should do next, holding her head a little on one side. The sparrow has a bold familiarity which destroys the interest we might otherwise feel for him. I have observed that the young ones which have been reared amidst the smoke of London, will hop about the streets before they can well fly, collecting crumbs of bread, or other food, and appearing to have imbibed so early that boldness, and carelessness of danger, which are so conspicuous to any one who has watched the character of a London sparrow. I am always amused in looking at this apparent recklessness of the bird, and then seeing how it secures itself from danger at the precise moment in which it is necessary to do so. Few things

indeed can shew more forcibly the powerful instinct which is implanted in animals for their self-preservation, than the means which they take to avoid danger.* I saw an instance of this lately in a stag. It had been turned out before a pack of hounds, and when somewhat pressed by them, I observed it twice to go amongst a flock of sheep, and in both cases to double back, evidently, I should imagine, with the intention of baffling the pursuit of the dogs. It would thus seem that the animal was aware of its being followed by the scent, and not by sight, and if this was the case, it affords another proof that animals are possessed of something more than common instinct.

In riding over the Brighton Downs I disturbed one of the horned owls. The sun was shining brightly, which probably caused the bird to alight again at a short distance from me. On going up to it, it cowered or rather squatted, like a hare in its seat, but always turned its eye towards me which ever way I moved. I disturbed it several times, and remarked that the bird not only made itself as flat as possible, but alighted on those places which assimilated most to its own colour. Both salmon and trout when they are hooked, will frequently throw themselves out of the water and endeavour, by falling upon the line with their whole weight, to break it. I have also been assured that when rats have been

* I have heard it stated, but I know not how truly, that when the corn is ripe, all the London sparrows migrate into the country. Large flocks of them are certainly seen in the neighbourhood of the metropolis in the autumn.

caught by the foot or leg in a trap, they will sometimes, in order to disengage themselves, gnaw off the limb. This puts me in mind of an anecdote related to me by a friend on whose veracity I can place the strictest reliance, and who himself witnessed the circumstance. It occurred while he was on a visit, last autumn to a gentleman who resides near Southampton. This gentleman had a retriever, a large half-bred Newfoundland dog, who had formed a friendship with a horse, which, at the time I am referring to, was turned out into a paddock near the house. The dog, hunting one day by himself, was caught in a snare by the leg, and after struggling some time, during which its cries were heard, he disengaged himself so far from his confinement as to break the string of the snare, the wire being still attached to the limb. In this situation he was observed, by my friend and his host, to go to the horse in the paddock, and seemed at once to make him aware of his distress. The horse gently put his nose down to the dog, and the dog having licked it, lifted up the leg to which the snare was attached in a manner which could not be mistaken. The horse immediately began to try to disengage the snare by applying his teeth to it in a gentle and cautious manner, although he was unable to succeed in removing it. This is by no means a solitary instance of the sympathy which animals shew for each other when in distress, and is another proof how much man, if he were so disposed, might learn from the brute creation to regulate his own conduct.

> 'The mole
> 'Rising, the crumbled earth above it threw
> 'In hillocks.' MILTON.

I LOSE no opportunities of conversing with mole catchers whenever I meet with them in my walks and rides. They are a singular class of men—what one would call *characters*—with a considerable share of low wit and a sly cunning look, slow and deliberate in all their movements and parts of speech. They are silent and stealthy in their walk, as if the very success of their operations depended on their not giving the alarm to the little animal they want to entrap. I also observe that they are generally much bent, from the constant habit they have of stooping to look for the runs of the mole. They are, however, possessed of much acuteness, and by means of a small fee now and then are tolerably communicative. The rat-catcher is a very different kind of person. There is frequently an impudent saucy kind of look about him, which seems to partake of the character of the animal he destroys. His very dogs are afraid of him, and they appear sulky and half starved. His conversation is generally in praise of his dogs and ferrets, and the number of rats he has destroyed with them. He is a great frequenter of the ale house, and conveys scandal from one village to another during the progress of his calling. My

friends the mole catchers, on the contrary, are a quiet and sober race of men, fond of accumulating money, and are seldom to be met with in an ale house. Their cottages are generally neat and clean, and the implements of their calling tidily bestowed in them, such as two or three spades, a bundle of tough hazels and some wooden traps. In an evening they may be seen twisting their horse hair nooses, or cutting an hazel stick to its proper length. One of these men shewed me, a short time since, a white or rather a cream coloured mole, which he had caught near the Robin Hood Gate in Richmond Park. He told me 'there were five of them, but that some *young chaps* had stolen the others.' He had it stuffed, as a little interesting incident in his calling worth preserving, and he seemed to set much store upon it. He has since brought me a grey mole (a young one) with an orange coloured belly, and he assures me that he once caught one that was perfectly orange, except the head, but it was too much decayed before he took it out of the trap, to be fit for preserving. This playfulness in the colour of the mole is extraordinary, and I have never yet seen it noticed by any one who has published remarks on this animal. There is a great variety of soil in Richmond Park, but the moles are most abundant in those parts of it which are loamy. Here the moles which are caught are invariably black, but others of a different colour have been taken in the wetter and more boggy parts, where there is a substratum of white sand. Whether this circumstance, or the dif-

ference in the sort of food found in these places, may influence the colour of the mole I know not, but one of these is possibly the case.

I observe that when a mole has its run up to the side of a hard gravelled road, it carries it a considerable depth under the road, and then comes nearer the surface immediately on the other side of it. This instinctive property of finding the exact spot where to begin again its usual depth of run is curious, and saves the animal much trouble.

During a particular season the male mole makes what mole catchers call the rutting-angles. These are much larger than the usual runs and must cause the animal considerable labour. They are about five inches wide and four inches deep, and are as near the surface as possible. The female goes a month with young and has never more than six or less than two at a birth. The young moles begin to run in about five weeks, and when they first start are about three parts grown. They follow their mother for some time during their search for food, and it would appear that they are not easily induced to quit her. A mole catcher informed me that he was once taking a female mole out of a trap, in which she had been caught some time, and found five young ones clinging about her, all of which he destroyed, though they might have made their escape. One of these men told me that previous to the setting in of winter the mole prepares a sort of basin, forming it in a bed of clay, which will hold about a quart. In this basin a great quantity of worms are deposited, and in order

to prevent their escape they are partly mutilated, but not so much so as to kill them. On these worms the moles feed during the winter months.* He also informed me that he finds the basins in much fewer numbers some years than others, and when this is the case he always knows that the winter will be a mild one. This circumstance, and the deposit of mutilated worms, shews the powerful instinct which the mole possesses. They are very pugnacious, and at particular seasons four or five males may be seen fighting together on the surface of the earth, having quitted their runs for that purpose. When this is the case one or two are generally left dead.

That moles were intended to be beneficial to mankind, there can, I think, be no doubt. I have been assured that where old mole-hills are most abundant on sheep pastures, the latter animal is generally in a healthy state, as it feeds on the wild thyme, and other salubrious herbs, which grow on these heaps of earth. Where these have been levelled and cleared away, sheep are not found to thrive as well as they did previously. This fact was confirmed to me by Mr. Hogg, the Ettrick Shepherd, who deprecated the practice of removing mole-hills. In Leicestershire, where old mole-hills are extremely abundant in the fine and extensive pastures which are to be found in that county, sheep thrive well, and are generally healthy. In further confirmation also of what has been stated, I have been assured that in

* This fact seems to disprove the assertion of Linnæus that the mole passes the winter in a state of torpidity.

consequence of the mole-hills having been destroyed in a park which formerly belonged to the present Earl of Essex, in Herefordshire, the deer in it never afterwards throve well.

I have remarked elsewhere, that in consequence of the mole working along its run early in the morning and late in the afternoon, when birds are most on their feed, they have by this means a supply of food afforded them. An observant person has assured me, that so great is the punctuality of the mole in commencing its morning and evening movements during the summer months, that he never knew them vary in their time.

It is a curious and extraordinary fact that moles are no where to be found in Ireland. One would think that the soil was particularly well suited for their operations, as I have frequently observed them to be most numerous in boggy soils, at least this was the case in some peat-earth in Staffordshire, where moles were exceedingly numerous, and made larger hillocks than I have seen in any other place. Dead birds and mice have sometimes been found in the nest of the mole.

In Herefordshire, moles are called munts, from their raising perhaps little mounts or hills; and, in Nottinghamshire, &c. *mouldiwarps*,* from the manner in which they use their hand-like fins, warping, or throwing off the mould on each side of them.

* Mouldiwarp is evidently the German word Maulwurf.

The Raven, like the miser, senseless thrift,
Hoards what he ne'er can use.

ANON.

THERE is a great variety of character amongst birds; some appear moping and melancholy, and others full of fun and hilarity. One variety of bird (the titmouse) is always restless and on the move, while another, the heron for instance, seems grave and thoughtful in its habits and slow and methodical in his movements. The bird however which amuses me the most, is the starling. There is an oddity, if I may use the word, in all he does; he appears curious and observant; in short, a sort of Paul Pry amongst his species. He has a great deal of sociability and amusing fun in his disposition, accompanied by great restlessness, and yet apparent good fellowship and good humour. The jackdaw comes next to him in these respects, but I know of no bird whose character is more strongly marked than that of the starling. He is easily tamed, and when in a state of confinement his good spirits do not forsake him, and he appears to reconcile himself to his situation with great philosophy. I had one of these birds brought to me which had been taught to whistle a tune very prettily. He was so tame as to be allowed to hop about the room, and he would sometimes come upon the table after dinner.

Some birds have a kindly feeling towards others

not of their own species, an instance of which was witnessed by a respectable clergyman to whom I am indebted for some other remarks. Happening to be in a meadow near Worcester, he observed a carrion crow, a magpie, and a smaller bird fighting together very furiously. He stopped at a short distance from them to endeavour to ascertain the cause, and to watch the result of the quarrel. After a short time he perceived that the crow was determined on the destruction of the smaller bird, and that the magpie was generously endeavouring to prevent it, not only by getting between the crow and his victim, but by fighting magnanimously in the defence of the latter. Several severe rounds had passed before he interposed, which was not till he saw that, notwithstanding the generous valour of the magpie, the crow would kill the smaller bird if he remained neuter any longer. He therefore advanced towards the scene of conflict, but so fiercely were the two chief combatants engaged, that he could have secured them both before they were aware of his presence. The smaller bird proved to be a jackdaw from the neighbouring cathedral. It lay upon its back, gasping, and one of its wings was broken at the first joint by the crow. It was carefully taken up and delivered to a market-woman, who had witnessed the battle, and who promised to nurse it till it was recovered. In the mean time the two antagonists had separated, the magpie "loud clamouring at the wrong," and abusing the crow in terms, the purport of which it was impossible not to understand.

The carrion crow is no favourite of mine, and is in fact a decided thief and pilferer. He has been seen to steal an egg from a hen's nest near a farm-yard, and, having perforated it with his beak, carry it to his own nest at a considerable distance. The rook on the contrary is a friend to agriculturists, and no farmer, who considers his own interest, will destroy a rookery. I once knew this done, in compliance with the request of many farmers, who, two years afterwards, were desirous that it should be restored; the wire-worms, cockchaffer, grubs, and other destructive insects, having greatly increased within that period. In order to be convinced that these birds are beneficial to the farmer, let him observe the same field in which his ploughman and his sower are at work. He will see the former followed by a train of rooks, while the sower will be unattended, and his grain remain untouched.

I had an opportunity of witnessing an instance of affection in birds of the same species this summer (1832), in Richmond Park. The person who keeps the lodge leading into the grounds of the Earl of Erroll in Richmond Park, had put a very young blackbird into a cage which was hung up under the porch of the lodge. After the bird had become reconciled to its confinement, and had begun to feed itself, an older black-bird was caught and put into the same cage with the other. This bird moped, and refused to feed itself, and would probably have died, had not the younger bird brought it food in its bill, and in every respect treated it as if it had been its mother,

nourishing it with the greatest perseverance for some time. Both birds are still companions in the same cage, and I also heard them both inwardly singing, or recording, about six weeks after their having been confined together.

The propensity which the raven has to hide things, is one of the peculiarities of its character. Many persons must recollect a raven, which used to hop about amongst the workmen employed in the construction of the bridge, at the top of the Serpentine river in Hyde Park. This bird, from its familiarity and odd habits, attracted at the time the notice of many persons, and amongst others that of a friend of mine. He constantly noticed and made many enquiries respecting it. It was taken from a nest on the top of an elm tree in Hyde Park, with two or three others, all of which died. The one in question, however, survived, and became perfectly tame and sociable. It haunted the spot I have mentioned, and would sometimes take long flights and be absent some days, but always returned to the bridge. One day a lady was passing over it, and dropped a valuable bracelet. She turned round to pick it up, but, before she could do so, the raven had seized and immediately flew away with it out of sight. It was conjectured that he had a hiding place in some distant tree, where probably, at some future time, the bracelet and other things may be found. The fate of this raven was a melancholy one. He was stolen,

and was not heard of for a long time. At last, however, he returned, and one of his wings was cut. He was unable therefore to resume his former habits, and moped about, and one morning he was found dead in the Serpentine river, to the great regret of many of his admirers.

The raven is supposed to be a very long-lived bird. Horace notices this, and also its augury of rain;

'aquæ nisi fallit augur,
'Annosa Cornix.'

Perhaps one of the signs it gave was the shaking its wings in some peculiar manner,

'Corvi—quatientes alas frequenter—'

or by its voice—

—'gutture corvi.' VIRGIL.

The raven has been considered with a superstitious feeling both by antients and moderns.

Mr. White says that ravens, in their common mode of flying, have a peculiarity attending them not unworthy of notice. They turn over in the air quite on their backs, and that not now and then, but frequently, often two or three hundred yards. When this odd attitude betimes them, they fall down several fathoms, uttering a loud croak, and then right themselves again. This strange vacillation seems to be owing to their scratching when bitten by vermin; the thrusting out their leg to do this destroys their equipoize, and throws their wings out of the true centre of gravity. Ravens spend their leisure time

over some hanging wood in a sort of mock fight, dashing and diving at each other continually, while their loud croakings make the woody steeps re-echo

In a very mild season, magpies will begin building in December, but cease their process of nidification as soon as the weather becomes severe If the ovarium is so far advanced as to remind the bird that it is time to prepare a place in which to deposit its eggs, it seems to have the power of retarding the further growth of the egg, until the proper season for laying is arrived. This appears to me a curious and interesting subject for investigation. Mr. White has remarked the fact of magpies perching on the backs of sheep in order to pick out the maggots and ticks from their wool. He adds, that they even mount on their very heads, while the meek quadrupeds seem pleased, and stand perfectly still, little aware that their eyes are in no small danger, and that their assiduous friends would be glad of an opportunity of picking their bones.

The breeding of woodcocks in this country was formerly considered as a circumstance that seldom happened, and indeed by some was altogether denied. So far, however, from its being a rare occurrence, they breed in some places very freely, of which I have been able to collect a few particulars. A gentle-

man, whose veracity cannot be disputed, assured me that several woodcocks bred every year in his woods, some of which adjoin Woolmer Forest in Hampshire. On my expressing some surprize at this, he said that he had offered a considerable bet that there should not be a day named in the course of the year, in which he would not produce a couple of woodcocks at his table, on receiving a short previous notice. He informed me that he always makes a point of having some on the 30th of June in every year. In walking about his woods, he frequently finds the nests of these birds, and so common are they, that they are no longer considered rarities. He added, that the woodcock has *invariably* four eggs, a larger or a fewer number never having yet been found by him or his keepers. The hen bird sits very close, and is not easily induced to leave her nest, allowing a person to approach very near to it. Addled eggs have never been found in it. The hen lays early in the spring, and the nest is very rude, being composed only of a few bents of grass. The young leave it as soon as they are hatched. Should the old bird apprehend her brood to be in any danger, she flutters her wings, and endeavours to attract notice to herself in the same way the partridge is known to do. On mentioning the circumstance of the woodcock breeding in this country, to a gentleman residing in Alice Holt Forest, he informed me that their nests are frequently found in that forest.

In the proceedings of the Committee of the Zoological Society, there is an interesting letter from Sir

F. Mackensie, relative to the breeding of woodcocks at Corran, on the eastern coast of Rosshire. From this letter it appears that last summer, (1832) Sir F. Mackensie's keeper found four woodcocks' nests, one having four, and the others three eggs each, all of which were hatched and ran. The young birds he repeatedly saw before they took wing, and now five or six couple may every evening, towards dusk, be observed flying about the lodge as they pass to their feeding grounds. The old birds give notice of their approach by a sharp cry of *twit-twit-twit*, repeated as rapidly as possible, and heard at three or four hundred yards distance; while the young ones are less noisy, and more flagging in the motion of their wings. Sir F. Mackensie states that he knows nothing more rapid than the flight of the woodcock before and after incubation, as, for an hour or two about dusk, he (probably the male, though two have been seen together pursuing each other) flies in large circles over the tops of the trees, uttering his sharp and piercing cry, a whistle which sportsmen may have occasionally heard weakly, when cocks are first flushed in the back flight in March. Sometimes his sudden flight will be arrested, and changed into a sailing slowly, like a pouter pigeon, his cry being at the time varied to a purr or a bleat resembling that of the Ptarmigan: then he will dart away with greater swiftness than a pigeon in full flight, moving his wings, however, with a different action from that of the pigeon, and with inconceivable rapidity.

The soil where the nests were found is gravelly

and rather dry; the grass tolerably long, without underwood; and the trees, oak, birch, and larch, not exceeding thirty year's growth. The situation is warm, and not far distant from a river. The woods are kept quiet. It is probable that the parent birds sought this spot for the purpose of breeding, as they must have arrived in the spring from other localities, for persons who shot in the covers as late as February, declare that they did not know of a single woodcock being then left in them; and had there been only two or three, the keeper must have been aware of it.

The circumstance which Sir F. Mackensie mentions, of as few as three eggs having been found in the nests of three different woodcocks, is at variance with the account sent me from Hampshire, where four appears to be the invariable number found in each nest, and this in many instances during a succession of years. Colonel Montagu also mentions four eggs having been found in a nest near Battle, in Sussex, and that a similar number were hatched in a wood at Shucoaks, near Worksop.

Four eggs also were found in a woodcock's nest in "Chicksand Wood," near Shefford, in Bedfordshire.

The eggs are stated to be about the size of those of a bantam hen, of a bluish white, with brown spots. The young birds are hatched in the beginning of May.

'Among the external characters by which Man is distin-
'guished from the Apes, which most closely resemble him, are
'the power of walking erect, the facility with which he uses two
'perfect hands, and the prominence of his chin.'

BLUMENBACH.

My fondness for observing the habits and manners of animals, led me frequently a few years ago, to Exeter Change, to look at the ourang, which was brought to this country in a ship commanded by Sir Murray Maxwell. The docility of this animal, its good temper, and civilized manners, interested me extremely. I remember once seeing it turn over the leaves of a book in which were some prints, and this he did with great propriety and decorum. Had he lived, I have no doubt that he would have become still more humanized, but he died after he had been in this country a short time. On mentioning this ourang, and the interest I took in it, to a gentleman connected with the Zoological Society, he very obligingly sent me the following account of one which was for a short time in the possession of a gentleman residing in the Regent's Park, and which died at the Zoological Museum in Bruton Street. I give the account as I received it.

'On its return from India, the vessel which con-
'veyed the poor little ourang to a climate always
'fatal to its race, stopped some time at the Isle of

'France to take in fresh provisions. The ourang 'accompanied the sailors in their daily visits to the 'shore, and their calls upon the keepers of taverns, 'and places of a like description. To one of these, 'kept by an old woman who sold coffee, for break- 'fast, the ourang was accustomed to go, unattended, 'every morning; and by signs, easily interpreted, 'demand his usual breakfast, which was duly deli- 'vered. The charge was scored up to the captain's 'account, which he paid before his departure.

'There was but one person on board the ship of 'whom the poor ourang seemed at all afraid. This 'man was the butcher. The ourang had seen him 'kill sheep and oxen in the exercise of his duty, and 'most probably anticipated from his hands a fate 'similar to that of his equally dumb, but not so in- 'telligent companions. However in order to conci- 'liate the friendship of this dreaded dispenser of 'death, he made every advance, although it must be 'owned in a very singular manner. He would, for 'instance, approach him with great caution, examine 'his hands minutely, finger by finger, and finding no 'weapon, proceed by every little artifice to attract his 'notice. With the rest of the sailors he was on terms 'of intimate friendship, and no doubt felt himself en- 'titled to all the attendant privileges, not unfrequently 'to the annoyance of his companions from whose 'hammocks he took such portions of bedding as he 'deemed necessary for his own comfort, and which 'he would by no means give up without a hard con- 'test.

'His conduct at table, to which he was familiarly 'admitted, was decorous and polite. He soon com-'prehended the use of knives and forks, but prefer-'red a spoon, which he handled with as much ease 'as any child of seven or eight years old.

'On his arrival in England, he soon began to sicken. 'During his illness he was removed to Bruton Street, 'where one of his favourites, I believe the cook, at-'tended as his nurse. He would raise his head from 'his pillow, turn his eyes on his attendant, with an expression as if entreating him to do something for his relief. He would at the same time utter a plaintive cry, but he evinced nothing like impatience or ill temper, and was compassionated by all who saw him.

'He lingered on a few days, and gradually grew worse and worse till he died, not without the regret of his nurse, and the sympathy of us all.'

' Here let me, careless and unthoughtful lying,
' Hear the soft winds above me flying,
' With all the wanton boughs dispute,
' And the more tuneful birds to both replying;
' Nor be myself too mute.

' A silver stream still rolls his waters near,
' Gilt with the sun-beams here and there,
' On whose enamell'd bank I'll walk,
' And see how prettily they smile, and hear
' How prettily they talk.'

COWLEY.

WHILE writing the following remarks, I am seated by the side of a narrow but deep brook, which slowly runs in a most irregular manner through some fine meadows. I am sheltered from the sun by an old oak tree, some of whose branches almost touch the stream. The little bank on which I am reclining, has formerly slipped from the higher ground, and forms a resting place equally commodious and pleasant. The meadow-sweet and other plants, are growing in the greatest luxuriance close around; the air is soft and the day delightful; birds are singing in all directions about me, and fish are every instant rising at flies on the water. It is in moments such as these that we enjoy, and feel grateful for what is beautiful in nature. The calm serenity of the morning, the absence of care, the solitude in which I find myself, all these

have for me inexpressible charms. The mixture of light and air which is diffused around us, influences the whole system of nature, and thus produces the beauty of some things, and the magnificence of others, affording inexhaustible matter for devotion and contemplation both to the Christian and the naturalist.

The hurried and what have been called 'imitative' notes, which I hear near me, are those of the sedge bird (corruca salicaria). It may be heard nearly all night long in the willow aytes on the Thames. The nest of the reed warbler (curruca arundinacea) is curious, and well adapted to the situation in which it is placed, which is amongst reeds and sedges, or very young and pliable willow shoots. Three stems, forming a triangle, are generally selected for the support of the nest, which is formed of dry grass, strengthened with the fibres of plants; these are twisted and bent in such a manner round the stems which support it, as to acquire considerable strength; and yet are so entwined with the sedges and willows, as to yield to every breath of wind, or any unusual current of water. The nest being thus liable to be agitated, the eggs would roll out if the bird had not the precaution to make it of a more than common depth. I have one of these nests now by me, and it is impossible not to admire its structure and wonderful adaptation to the situation in which it is found.

The white-throat (Motacilla Sylvia), is a bird of the same genus, although its habits are very dissimilar. Its note has been designated as harsh and unpleasing, but I cannot help thinking it forms a

pleasing variety amongst our songsters. This bird imitates, as I have frequently observed, the notes of the swallow and sparrow ;—*

'The sporting white-throat on some twig's end borne,
'Pours hymns to freedom and the rising morn.'

Amongst the variety of birds, however, which I hear around me, there is not one which gives me so much pleasure as the black cap (Motacilla Atricapilla). It is now singing in good earnest, and nothing can be sweeter than its melody. Its notes, previous to the arrival of the female (for the male is the first to migrate), are very different from what they are after she has paired with him. Before that period, the male exerts all the powers of his song as if to invite her to join him. This has been called the 'love laboured song.' After the pairing has taken place, the male does not sing as before, nor is his voice heard so frequently or so loud. While the female is searching for a place in which to build her nest, the notes of the male are peculiarly soft. When the young are hatched, his song entirely ceases, as, if it were continued, it might expose them to the danger of being discovered; and besides his time is employed in procuring food for them. If, however, there should be a second brood, his notes are again heard. It has been supposed, that if a bird which had been confined, and had learned the song of another, without retaining any of his original notes,

* I have also remarked that the imitative notes are always the commencement of the song.

were to be set at liberty, he would not be able to find a mate; in short, that it would not be possible for him to make himself understood, although paying his addresses to one of his own species. Colonel Montagu says, that he has never been able to discover the parent birds giving their young a musical lesson; and he questions, whether the late brood of many species, ever heard the song of their parents till the ensuing spring. I once, however, took a very young sky-lark from the nest, and reared it, and it never heard but one tune, which I whistled to it several times a day. This tune, when I listened attentively, I could distinctly hear it inwardly whistle, or in the language of bird-fanciers, record it. It seems difficult, therefore, to suppose that birds in a wild state do not imitate the notes they hear. If a bird heard none, he would not, I think, be able to sing at all. While, reclining in perfect stillness, I am listening to the various notes around me, the red-breast, another of the Motacilla tribe, influenced apparently by curiosity, comes closer to me than any other bird. The cock red-breast is very gallant, and feeds his hen as they hop about together, the latter receiving his bounty with great pleasure, shivering her wings and expressing much complacency.

Though I cannot say that

'The twittering swallow skims the dimpled lake,'

yet it is continually flitting past me as it hawks for flies, sometimes lightly touching the water, and then, describing one of its rapid and elegant circles on its

banks. I delight in the swallow. Its appearance tells me that fine weather is approaching, and there is an apparent hilarity and independence in its motions which I always admire :—

' The swallow for a moment seen,
' Skims in haste the village green.'

Sir Humphrey Davy has recorded his admiration of this bird in language almost poetical. ' The swal-
' low,' he says, ' is one of my favourite birds, and a
' rival of the nightingale, for he cheers my sense of
' seeing as much as the other does my sense of hear-
' ing. He is the glad prophet of the year—the har-
' binger of the best season—he lives a life of enjoy-
' ment amongst the loveliest forms of nature—winter
' is unknown to him; and he leaves the green mea-
' dows of England in autumn for the myrtle and
' orange groves of Italy, and for the palms of Africa;
' he has always objects of pursuit, and his success is
' secure. Even the beings selected for his prey are
' poetical, beautiful and transient. The ephemeræ
' are saved by his means from a slow and lingering
' death in the evening, and killed in a moment when
' they have known nothing but pleasure. He is the
' constant destroyer of insects, the friend of man,
' and may be regarded as a sacred bird. His instinct,
' which gives him his appointed season, and teaches
' him when and where to move, may be regarded as
' flowing from a divine source; and he belongs to
' the oracles of nature, which speak the awful and
' intelligible language of a present deity.'

The swallow tribe appear full as soon in the midland counties as in the maritime, a circumstance which Mr. White thinks is more favourable to hiding than migration. They fly, however, with so much rapidity, and probably in so unerring a line, that the small space which intervenes between a midland and maritime situation in this island can make but little perceptible difference in the times of their appearance.

Martins, in addition to the nests in which they lay their eggs, build near them the apparent foundations of several others. On one of these the male roosts while the female is sitting, and they both sometimes rest on them in the day time. Mr. White, however, thinks that these supernumerary constructions are the effect of caprice. Martins are the least agile and shortest winged of all the swallow tribe. They take their prey in a middle region, not so high as the swift, nor do they usually sweep the ground so low as the swallow. They breed the latest of all the swallow genus, and usually stay with us latest; like red-breasts, they are seldom seen at any distance from the habitations of man. They repair and inhabit nests of many years standing, to effect which they gather moss and grasses from the roofs of houses. I observe that when swifts unite flying they raise their wings over their backs. When swallows bring out their broods, they place them on rails that go across a stream, and so take their food up and down the river, feeding their young in exact rotation. These generally keep in a row, close, or nearly so,

to each other. If a hawk is in the air above them, the young swallows may be seen turning their eyes towards it. It is extraordinary how soon instinct teaches animals to discover and avoid what may be hurtful to them. The reason of young swallows being often found dead under the nest is, from their throwing themselves out in consequence of the nests being so full of insects as to become insupportable.

When swallows are preparing to migrate, I observe that they take two or three flights to some height in the air, returning each time to settle on the aytes* or

* As the word Ait or Ayte has been mentioned, the following derivation of it may not be unacceptable to my readers. I am indebted to my friend Mr. Nicol for it.

Ait, or Eyght; supposed by SKINNER to be corrupted from islet.

Ey, Ea, Ee, from the Saxon ıᵹ, an island, &c. Hence comes *eyet* or islet, sometimes written *Eight*.

Eyot, a little island; used by BLACKSTONE.

Eight, ıᵹᵹað, an island in a river. EVELYN.

In White Kennett's Parochial Antiquities of Ambrosden and Burcester, Oxford, 1695, page 295, may be found the following early use of the word.

An. 1280. 8. 9, Edw. I.

' Noverint Universi Fideles quod Edmundus Comes Cornubiæ dedit concessit et hoc præsente scripto suo confirmavit dilecto servienti suo Johanni de la *Russe* duas placias prati quæ jacent prope Thamisiam quæ vocatur (sic) Portires-*Eytes*, &c. reddendo inde annuatim prædicto Edmundo Comiti, et hæredibus suis unam *Rosam* [the Earl has punned in his grant] in Festo Nativitatis Beati Johannes (sic) Baptistæ in Castro de Walingford pro omni servitio exactione et demanda. In his Glossary Kennett says, ' so the low mershy tract that lies by the river

banks of the Thames. When about to take their final departure, they wheel round and round in the air, mounting higher and higher till they can be seen no longer, and but few stragglers are left behind. Swallows fly low on the approach of rain, as probably flies, and other insects, on which they feed, do not rise at such times above the surface of the land or water.

Many persons imagine that swallows arrive in this country in the night, as I believe is the case with most migrating birds. I fancied, however, the other day, that I saw the first arrival of some of them. I was riding in the meadows, attached to Kew Gardens, and not far from the Thames, when I saw about 200 settle on the ground. On approaching them, I found them so much exhausted, that they allowed me to come close up to them. They then took a very short flight and settled again almost immediately. I had no means at the time of having one killed, or I should have taken the opportunity of examining its crop.

I have said that house-martins repair and inhabit nests of many years standing. This is not the case with the sand-martin, who undergoes the labour of excavating a new nest every year. The bank*, which they fix upon, is generally perpendicular. The extremity of the hole of a sand-martin is formed like

' in *Blackthorn* within the parish of *Ambrosden*, is now called '*Blackthorn-Eyte*.'

* Steethe, in Saxon, signifies ripa, a perpendicular bank; hence *Steethe swalewe*, riparia hirundo, bank swallow.

the bowl of a spoon, and in this the nest is placed. Mr. White observes, that the bills and claws of this bird are soft and tender. Colonel Montagu, however, says, that so far from this being the case, they are more than commonly hard and sharp, and admirably adapted for digging. The bill is small, but its very shortness adds to its strength, as it suddenly tapers to a point like the end of a pair of fine compasses when shut.

In looking over Mr. White's various published and unpublished remarks on the martin, I find that he never abandons the idea of the probability of the late house-martins finding a ready and obvious retreat in a neighbouring church, ruin, cliff, sand-bank, lake or pool, where they may pass the winter in a torpid state. The fact of their migration, however, is undoubted; and that, not only to a short distance from this country, but across the Bay of Bengal, where ships have been literally covered with them; indeed, the captain of an East Indiaman assured me that they had once entered his cabin, the windows of which he had left open during the hot weather. The migration of these birds from this country is probably occasioned, not so much by cold, since we find them in the spring, amidst frost and snow, as by a want of food. In the cold autumn of 1829, we had sharp frost before the swallows had taken their departure, at which time, instead of migrating, they were seen clustering together like a swarm of bees, under the eaves of a house at Kingston-on-Thames. In clustering they spread out their wings, and clung

one upon the other.* The later house-martins, which are sometimes seen as late as December, may either be in a weakly state, or possessed of a less powerful migratory instinct; or they may have fallen in with some warm sheltered spot, where flies were sufficiently abundant to induce them to delay their departure. Mr. White hints that a few martins may occasionally be seen in the spring long before the generality of them arrive. Nothing, I think, can be assumed from this circumstance, since the same happens in the case of all migratory birds; the woodcock, nightingale, &c. and a want of food in certain parts of a northern tropic may have driven them to this country before others, who were able to obtain a supply; or, indeed, their ovaria may have been in a more advanced state than those of their companions.

Some large flights of swallows left the aytes, in the Thames, the first week in the September of last year, (1831), some a week afterwards, and the last flight I observed was on the 16th of the same month. Young house-martins, however, have been found just ready to fly from the nest as late as the 21st of October. Sand-martins bring out their brood earlier than any of the other species of swallows. I should

* I find a similar circumstance mentioned in Mr. White's manuscripts. He says, 'April 30, 1787, this day was cold and 'sharp at Rolle, when a number of martins formed two thick 'clusters, in the front of an house, in one of the streets of 'that town. They descended gently as they arrived on one 'another.'

not omit to mention that, when young swallows are able to hawk for flies for themselves, the old birds, nevertheless, continue to feed them, when on the wing, for some time afterwards.

'——— This guest of summer
'The temple-haunting martlet.'
SHAKSPEARE.

I LOVE to hear the screams of the restless swift, on one of our calm delightful summer evenings. I love to watch its flight, its various evolutions, and the boldness with which it unexpectedly passes close to me; secure in the strength of its wings and the rapidity of its motions.

It is impossible not to admire its rapid whirls, and long continued flight, dashing as it does, sometimes under the arch of a bridge, and at other times round and round a neighbouring building, 'squeaking as it 'goes in a very clamorous manner.' This is supposed to be the mode in which the male serenades the hen when sitting, and I think there can be little doubt but that such is the case The squeak is repeated every time the bird passes the entrance of the nest; and I have observed that at such time its flight perceptibly slackens. The swift keeps on the wing longer, perhaps, than any other bird, never going to roost in the long days till about a quarter before nine. Just before they retire for the night, their squeak may be heard, and they then dash and shoot about with wonderful rapidity. They are on the wing at least seventeen hours, when the days are at their greatest length.

Mr. White remarks that the house, or chimney-swallow is, undoubtedly, the first comer of all the British hirundines, and that it in general makes its appearance on or about the 13th of April. This year, however, (1832), it was observed by a friend of mine, in Sussex, on the 3d of April; and not long afterwards was seen in the neighbourhood of Hampton. Although this has been a backward spring with us, it does not seem to have affected the appearance of the swallow, whose arrival, this year, was unusually early. Late or early, however, I am always glad to see it, forming, as it does, an essential part in the *hilarity* of nature :—

' Gentle bird! we find thee here,
' When nature wears her summer vest,
' Thou com'st to weave thy simple nest;
' And when the chilling winter lowers,
' Again thou seek'st the genial bowers.'

MOORE.

Open as my eyes are, and I trust ever will be, to the charms of nature, and every circumstance attending her beautiful economy, I must not omit to mention the graceful and elegant manner with which my favourite, the swallow, touches the surface of the water in her flight :—

' arguta lacus circumvolitavit hirundo.'—VIRGIL.

Her motive for doing this I know not; probably, she sometimes sips of the element over which she is flying, or moistens a piece of clay for her nest. Swallows, like swifts, will hawk for flies from three o'clock in the long summer mornings until nine at

night, so earnest are they in pursuit of food. Unlike the swift, however, they occasionally stop to rest themselves, and they then sing very prettily.

I often think how much we should miss the swallow tribe, if they were no longer to make their appearance in this country. One of the consequences of the late hurricane in some of the West India islands, was to sweep off the whole of the humming birds; and I can fancy how desolate would be the face of this country should an occurrence of a similar nature deprive us of our friends the swallows. Moreover, they are of real consequence to us, as the destroyers of myriads of gnats and troublesome insects. They do not confine themselves to districts, but follow insects wherever they are most abundant, thus keeping them within proper bounds, and rendering us a most essential service. I have watched them hawking for flies over some fine meadows in Oxfordshire, where the latter are very abundant; and then, as if with one consent, settle on the tops of some high elms for a few minutes; the whole quitting them, however, at the same instant. There is an apparent glee and sportiveness amongst swallows on a fine summer's evening, which I have much pleasure in watching.—

'So when the earth smiles with a summer's ray,
'The wanton swallows o'er the valleys play;
'In sport each other they so swiftly chase,
'Sweeping with easy wings the meadow's face,
'They seem upon the ground to *fly* a race.'

BLACKMORE.

Swallows seem to entertain the recollection of injury and to resent it when an opportunity offers. A pair of swallows this summer (1832) built their nest under the ledge of a house at Hampton Court. It was no sooner completed, than a couple of sparrows drove them from it, notwithstanding the swallows kept up a good resistance, and even brought others to assist them. The sparrows were left in peaceable possession of the nest, till the old birds were obliged to quit it at the same time to provide food for their young. They had no sooner departed, than several swallows came and broke down the nest; and I saw the young sparrows lying dead on the ground. As soon as the nest was demolished the swallows began to rebuild it, and while I am writing this, they are busily engaged in their work. The whole transaction was witnessed by a gentleman who resided close to the spot.

A remarkable instance of the sense and reflection of the swallow (I must not call it reason), was lately related to me by a nobleman, whose accuracy and good sense are only equalled by his kindness and benevolence. He informed me, that a pair of swallows built their nest under the arch of a lime kiln at its extreme point, and from which three chimneys or flues branched off. At the time the nest was constructing, the heat of the kiln was so great, that only keeping the hand for a short time within the arch, produced a painful sensation. In this spot, however, the nest was nearly completed, when the heat caused it to crumble, and fall to the ground. A second nest

was built in the same spot, and afterwards a third, both of which shared the same fate. A fourth nest was then built, which stood perfectly well, although the heat of the kiln had by no means abated; and in this nest the swallows hatched and brought up their young. The following year another nest was begun and finished in the same spot, and with the same heat in the kiln, which stood the influence of the fire, and in which the swallows hatched and reared their brood; and this was done in the same manner on the third year. The fourth year the swallows did not appear, which the lime burner considered as very ominous of the future success of his kiln. They had probably been destroyed.

In reading the above account, of the accuracy of which no doubt need be entertained, it is impossible not to be struck with the following facts.

1st. The swallows must have discovered and worked up a sort of clay or earth which would stand heat.

2d. Instinct alone would not have taught them to do this.

3d. On returning to the kiln the second and third years, they must have kept in their recollection not only the fact, that the earth they commonly used to build their nests with would not stand heat, but must also have remembered the sort of earth or clay which was requisite, and the necessity of their making use of it in that particular place.

Those persons, who are inclined to agree that mere instinct could have taught swallows to perform what has been here related, are not, I think, doing justice

to the sense and intelligence of these interesting birds. If reason did not influence their operations, it was something very nearly allied to it; but where that alliance begins and ends, is a question which it is not easy to answer. Mr. White says, that philosophers have defined *instinct*, to be that secret influence by which every species is impelled naturally to pursue, *at all times, the same way or tract,* without any teaching or example; whereas *reason,* without instruction, would often vary, and do that by many methods, which instinct effects by one alone. If this definition of the difference between instinct and reason is correct, the instance which I have just related respecting the swallows, would seem to entitle them to be called reasoning animals.

Let me here introduce a little anecdote, corroborative of what I have been saying of the superior intellect of the swallow. I received it from a person on whose veracity I can place the most perfect reliance, and who himself witnessed the whole of the proceedings I have heard a similar story, but never before from such good authority.

A pair of swallows built their nest against one of the first floor windows of an uninhabited house in Merrion Square, Dublin. A sparrow, however, took possession of it, and the swallows were repeatedly seen clinging to the nest, and endeavouring to gain an entrance to the abode they had erected with so much labour. All their efforts, however, were defeated by the sparrow, who never once quitted the nest. The perseverance of the swallows was at length

exhausted: they took flight, but shortly afterwards returned, accompanied by a number of their congeners, each of them having a piece of dirt in its bill. By this means they succeeded in stopping up the hole, and the intruder was immured in total darkness. Soon afterwards the nest was taken down and exhibited to several persons, with the dead sparrow in it. In this case, there appears to have been not only a reasoning faculty, but the birds must have been possessed of the power of communicating their wishes, or rather, their resentments, to their fellow species: without whose aid they could not thus have avenged the injury they had sustained. This anecdote may appear to many persons marvellous and improbable, but I am as much convinced of its truth, as if it had been witnessed by all the world. It is Grotius, I think, who styles this faculty in animals, '*extranea ratio;*' and the swallow, certainly, appears to possess it in a great degree.

Swallows delight in warm and sunny situations, probably because flies are more abundant there than in other places. That accurate observer of nature, Shakespeare, speaking of martins and swallows, says,—

> —'Where they do bide and build,
> 'The air is temperate.'

That swallows are of vast use in keeping down an undue proportion of insects, there can be no doubt; and the following which I received from an observant clergyman, will prove it. He informed me, that while he held the living of Tedstone Delamere, in

Herefordshire, he was fond of encouraging swallows to build about his residence; in the first instance this arose from no other motive than a desire to see them unmolested; but he afterwards found his advantage in it. The beautiful parish of Tedstone contains many hop-gardens, one of which was attached to the rectory, and rendered unusually picturesque and pleasing, by having winding walks formed amidst the plantation. These walks were of great beauty while the festoons of amber-blossoms were overhanging them on every side. To some of the detached houses in the parish, martins and swallows seemed as partial as they did to the rectory, but the birds were shot at by the farmers, to 'keep their hands in for the first 'of September,' while their nests were demolished as fast as they were built. The consequence was, that the colony at the rectory was considerably increased by the persecuted birds resorting to it, and the advantage derived from them was this:—one season when there was a general failure of crops in the hop-gardens throughout the parish, the one belonging to the rectory blossomed in abundant beauty. This was attributed to the numerous little willing labourers, who from morning to night were winging their way among the poles, devouring myriads of flies, and conveying still greater numbers to their young. So convinced were the farmers of the error they had committed in destroying these birds, that they ceased to persecute them any longer. It has, however, always been accounted unlucky to destroy swallows. We read in Ælian, that these birds were sacred to

the *penates*, or household gods. They were honoured anciently as the nuncios of the spring, and the Rhodians are said to have had a solemn anniversary song to welcome in these charming heralds of summer.

' Tu cara Rondinella
' Dall Africano lido
' Ogni stagion novella
' A far qui vieni il nido;
' E poi ne' freddi giorni
' Sul Nilo o a Menfi torni:
' Ma in petto ognor mi stanno
' Gli amori, e nidi fanno,' &c.

Anacreon, however, does not always appear to be in such good humour with them, though his very threats seem to shew his fondness for these harbingers of spring. Who is not acquainted with his beautiful ode, in which he reproaches the swallow for disturbing his repose; or the beautiful translation of it by the bard of Ireland?

' Silly swallow! prating thing,
' Shall I clip that wheeling wing;
' Or, as Tereus did of old,
' (So the fabled tale is told,)
' Shall I tear that tongue away—
' Tongue that uttered such a lay!'

So little was known of the emigration of the swallow fifty years ago, that Dr. Johnson in one of his conversations with Boswell, makes the following observation, ' Swallows certainly sleep all the winter. ' A number of them *conglobulate* together, by flying

'round and round, and then all in a heap throw 'themselves under water, and lie in the bed of a 'river.' This idea is still prevalent amongst many persons who reside on the banks of the Thames. They see swallows settling and roosting by hundreds and thousands on the willows growing on the aytes of the river, which are bent down to the edge of the water by the weight of the birds, and the next day, perhaps, not one is to be seen. It is therefore concluded, that they have immersed themselves. It is a common trick amongst the Thames fishermen in this neighbourhood, to send a *new-comer* late in the evening, with the offer of some small reward, to an ayte which is covered with swallows, one of which he is to catch with his hand. I am assured that such is the vigilance and activity of these birds, that however dark the night, and however great the caution used, no one instance has occurred of a bird being taken in the manner I have mentioned.

It is an interesting sight to watch the young chimney swallows after they have quitted their nest, sitting quietly on the top of a chimney and receiving, one after another, the food brought to them by the parent bird. During the period of incubation, the male shews the greatest affection for, and attention to, his mate, and serenades her from the chimney top as soon as the first gleam of light appears.

Kalm, in his travels in America, tells a pretty anecdote of the swallow, which, he says, was related to him by a lady of great respectability, who was a witness of the fact.

'A couple of swallows built their nest in a stable 'belonging to the lady in question, and the female 'laid eggs in the nest, and was about to sit upon 'them. Some days after, the male was seen flying 'about the nest, sometimes sitting on a nail near it, 'and uttering a very plaintive note, which betrayed 'his uneasiness. On a nearer examination, the fe- 'male was found dead in the nest, from which she 'was removed, and her body was thrown away. The 'male then went to sit upon the eggs, but after 'being about two hours on them, and perhaps finding 'the business too troublesome, he went out, and re- 'turned in the afternoon with another female, who 'sat upon the nest, and afterwards fed the young 'ones, till they were able to provide for themselves.'

I have frequently noticed how apt swallows are to settle on the ground, in a row, or perfect line. I have no doubt but that many persons must have observed this, while they have been walking near the Serpentine River in Hyde Park, during a fine autumnal day. The birds, after hawking for flies upon the surface of the water, will all at once settle on the path which extends across the head of the river in so perfect a line, that one looks at it with astonishment as the simultaneous act of the birds.' Their flight is equally sudden and regular on the approach of an intruder. I have also noticed this regularity of line in young birds, while waiting for food from their parents.

I observed a curious departure from the usual mode of building, in the martin during this summer.

The circumstance occurred at the Virginia Water, in Windsor Great Park. Near the fishing temple on that beautiful lake, there is a cottage, part of which is covered with a *trelliage*, against which a pair of swallows had endeavoured to build their clayey nest, the spot they had chosen being protected from the weather by the large and projecting wooden eaves of the cottage. Whether they found any difficulty in fixing the earth for their nest, in the peculiar spot they had selected, or from some other cause, the vacancy only between the wall and the trelliage was filled up with a small deposit of clay, but the nest itself was built of grass and straw, and was fixed alike in the trelliage and the deposit of clay. Here I saw the swallow sitting on her eggs, the depth of the nest being very inconsiderable.

I trust that I have now made my readers sufficiently acquainted with these interesting 'guests of summer,' but, before I conclude this notice of them, I would plead in their behalf, for the purpose of endeavouring to put a stop to the cruel custom of wantonly shooting at them. Independent of the cruelty of starving whole nests of young ones by killing the old birds, they may be scared from a neighbourhood by being frequently disturbed; and then comes a redundancy of insects, producing blight, mildew, and other disorders on our corn and plants. We are also deprived of their hilarity, their thousand meanderings in the air, their pretty twitterings, and all the agreeable associations which their presence gives rise to. The swallow-shooter is, moreover, guilty of a breach

of hospitality, by destroying a bird which has voluntarily placed itself under his protection, and which has always been considered as a privileged guest.

> 'The swallow, privileged above the rest
> 'Of all the birds as man's familiar guest,
> 'Pursues the sun, in summer brisk and bold,
> 'And wisely shuns the persecuting cold:
> 'When frowning skies begin to change their chear,
> 'And time turns up the wrong side of the year,
> 'It seeks a better heav'n and warmer climes.'
>
> DRYDEN.

Since writing the above, I have had another opportunity of witnessing a peculiarity in the habits of the swallow. Residing near the River Thames, and having a window opening close to its banks, I frequently amuse myself with watching the vast congregations of them as they skim along the surface of the water. But a few moments since, I heard a swallow, apparently at some height in the air, utter two shrill notes; on hearing which I observed the whole of the flock quit the water, and rise into the air, so as almost to disappear from the sight. After a short time they returned to hawk for flies, and dip their bodies on the surface of the river at the place they had just before quitted. If the notes were not intended as a warning of approaching danger, I could almost fancy that it was a call for them to partake of a banquet of insects which had suddenly made their appearance elsewhere.

On mentioning this circumstance to an observant friend, with whom I have had many very agreeable

conversations on Natural History, he informed me that when he was lately at Malvern, he had an opportunity of observing the effect which the two notes I have just described had on a large assemblage of swallows. They had congregated in great numbers on the roof of a house at that place. The preceding evening had been cold and somewhat frosty, so that early in the morning the swallows were so torpid that he caught two or three of them in his hand, as they rested on the roof near the window of the room in which he slept. While they were in this state he heard two shrill notes from a swallow, and in an instant the whole of them took wing simultaneously, and having made two or three circuits in the air, disappeared altogether. He fancied that these circuits were preparatory to their migration, but they were more probably a notice that food was at hand. At all events it seems clear to me that there is a master or leading swallow, who guides the movements of the rest while they are as usual, congregating previous to their migration. Having mentioned this circumstance, I trust that it will engage the attention of others, so that further light may be thrown on this curious fact in the economy of the swallow.

I have already mentioned that Mr. White never abandoned the idea of swallows hiding themselves during the winter months. I find the following lines composed by him on this subject amongst his unpublished manuscripts.

THE SWALLOW.

Lyre-like attunes the sultry, summer hours;
When chilling winter comes, she torpid feels,
And fabricates her house amidst a tree,
Envelop'd warm within the hollow stem;
Moulting she here puts off her feathery garb;
Yet still again renews her youthful coat,
As when the dead arise from out the tomb;
For spring again brings round her resurrection;
She twitters much, and talks the whole day long;
(If birds may be allow'd the powers of speech)
O man! learn to revere the resurrection,
When twittering swallows rise as from their tomb

G. W.

The last swallow I observed this year (1832), was on the 25th of October. A pair of them were hawking for flies over the River Thames in the neighbourhood of Old Windsor.

'When autumn scatters his departing gleams,
'Warn'd of approaching winter, gather'd, play
'The swallow people.' THOMSON.

'Go, child of Nature, range the fields,
'Taste all the joys that spring can give,
'Partake what bounteous summer yields,
'And live whilst yet 'tis thine to live.'

THE *unanimity of purpose* in swallows is one of those facts in natural history which I always reflect upon with wonder and curiosity. I allude to those vast collections of them which are seen every year on the banks of the Thames, the attempts they appear to make in order to prepare themselves for their migration, and the sudden disappearance of the whole flock in one instant. They may be compared to one of those vast caravans which are known to assemble in the East, in order to make the passage of an extensive and dangerous desert, for the purpose of arriving at some far distant place. Those have, however, a leader, and a sun, a moon and stars to guide them; while the swallow, with nothing to direct it but that unexplained instinct which a beneficent Creator has implanted in it, traverses the *deserts* of the air, passes through regions where it had never been before, and may be seen skimming the pools of Greece (its Mecca) with its wonted hilarity,

- 'there
'They twitter cheerful, 'till the vernal months
'Invite them welcome back' ———

The mystery of instinct is, indeed, great, and human ingenuity cannot satisfactorily explain it. Here we see thousands of swallows, old and young, assembled together at one spot in each year, and generally about the same day in each year. So many myriads of birds could not have been produced in the immediate neighbourhood, and therefore we may fairly presume that they have arrived from places far remote from each other. But what leads them to assemble on a little ayte on the river Thames? How do the metropolitan and the Selborne swallows, those from villages in Sussex and Berkshire, or any other places, become possessed with such an unanimity of purpose? We see a vast flock assemble in the course of one day; they remain with us two or three, and after having made several circuitous flights,

- 'the feather'd eddy floats,'

and then they suddenly disappear. But how is the moment of their departure determined upon? Some may be weary, and others young and weak, and yet not one is left behind.

I have been assured, however, by a gentleman residing on the sea-coast in Lancashire, and who is a great observer of the habits of swallows, that, after they have taken their annual departure, a sudden storm has happened and they have re-appeared

in his neighbourhood. There can, I think, be no doubt, that swallows re-migrate from this country in the spring, if the weather is not genial, after their first arrival. I observed this to be the case in the spring of 1834. A large flight of them arrived in the neighbourhood of Richmond, Surrey, on the 5th of April, but there was a prevalence of cold winds at the time, and they all disappeared. I did not see them again in any numbers until the beginning of May. There seems little doubt, therefore, but that the cold weather drove them back to milder regions. The arrival of cuckoos was retarded probably for the same reason.

The migratory nature of swallows appears to be the same in all countries of the world where they are found, and they seem to possess the same impulse to guide them. Thus a friend, who had resided at the Cape of Good Hope some years, and where a great variety of the swallow tribe is found, informed me that they all disappeared at a certain season of the year, as they do with us. I was also told by the Captain of an Indiaman, that when he was in the Bay of Bengal, his ship was covered with swallows when he was far from land. The following extract of a letter from an observant traveller, will shew the time of their appearance and disappearance at several places in Europe.

'Swallows disappeared at Rolle, in Switzerland, 'about the end of September, but on the 17th of 'October, I saw a pair as we passed among the 'mountains towards Fort le Cluse, on the road to

'Lyons, and my servant saw a pair on the 19th, 'when we had got through the mountains into 'Bresse. Passing an islet of the Rhone, October '23d. near Pont St. Esprit, I again saw a swallow, 'which dipped to drink. I was ashore, November 'the 10th, at Porto Longona, in the Isle of Elba, 'and saw three swallows crossing the port towards 'us: they flew almost straight, and very swiftly, and 'I should have supposed were going to Italy, if the 'distance had been less, and the sun not so near 'setting. Swallows appeared at Naples early in 'February, and on the 8th of March, martins were 'busy building under the eaves of a house at that 'place. On the 18th of March swallows were first 'seen on the Lake of Geneva, and on the 25th were 'numerous. I am assured that a single martin com-'monly arrives first as if to explore, and again with-'draws as if to fetch a colony.'

Swallows, in taking their departure from this country, have been seen in a continuous line of more than half a mile in length. The flight began at four o'clock in the evening of the 27th of September, in a southern direction. Swallows, however, do not arrive in as great numbers as they leave us. On the 6th of May, this year (1833) about 200 of these birds settled on the ayte opposite the Toy inn at Hampton Court, and appeared tired and exhausted. This is one of the aytes from which they generally take their departure, and is the second instance I have observed of their arrival upon it in about the same numbers.

In examining the head of a live swallow, it is impossible not to observe the extraordinary appearance of sagacity in it, and which is perfectly distinct from that of any other bird. Indeed, it is quite impossible to look at it, with the quickness, animation and sense of the eyes before one, without being impressed with the idea, that the Almighty Creator has endowed it with properties of a very peculiar kind, and which enable it to do things which have a great affinity to reason?

The confidence which swallows place in the human race is not a little extraordinary. They not only put themselves, but their offspring, in the power of man. I have seen their nests in situations where they were within the reach of one's hand, and where they might have been destroyed in an instant. I have observed them under a door-way, the eaves of a low cottage, against the wall of a tool-shed, on the knocker of a door, and the rafter of a much frequented hay-loft;—

'At caret insidiis hominum, quia mitis, hirundo.'

Dr. Richardson, in his American Fauna, mentions an interesting fact in regard to these birds, and which shews the confidence they place in man. He says, 'that on the 25th of June, 1825, a number of 'cliff swallows (Hirundo lunifrons) made their first 'appearance at Fort Chepewyan, and built their nests 'under the eaves of the dwelling-house, about six 'feet above a balcony that extends the whole length 'of the building, and is a frequented promenade.

'They had thus to graze the heads of the passengers 'on entering their nests, and were, moreover, ex- 'posed to the curiosity and depredations of the chil- 'dren, to whom they were novelties; yet they pre- 'ferred the dwelling-house to the more lofty eaves of 'the storehouses, and in the following season returned 'with augmented numbers to the same spot.' This appears, from what is subsequently said, to have been the first instance of this species of swallow placing itself under the protection of man, within the widely extended lands north of the great lakes of America. Its clustered nests had previously been found on the faces of rocky cliffs.

I have seen a swallow's nest built against a pane of glass, where it appeared to stick very firmly, although it had no other support. The birds must, I think, have made use of some unusually glutinous matter in order to make the nest adhere to the glass; I mean something different from what they would have used had the nest been built against a wall.

I observe that the chimney-swallow begins to twitter or sing almost on its first arrival. This leads me to think that the male birds arrive first, and the females probably some time afterwards. This is the case with many of our small migratory singing-birds, the males arriving first, and singing with great earnestness to collect the females around them.

There is scarcely a village in England in which an assemblage of some four or five hundred swallows may not be seen early in September, either on the

church or some other large building. These, in their flights, meet with other assemblages, and join them, and this may account for the vast collections of these birds on the aytes of the river Thames. When seen on a building, they open their wings to admit the warmth of the sun, and preen their feathers, appearing joyous and happy. It is a pretty sight, but it reminds us that winter is approaching. I am never tired of watching swallows: there is an elegance and pleasing hilarity in all they do.

It is worth enquiry, and might be ascertained, whether, when the swallow leaves us in the autumn, it breeds again in those mild climates to which it resorts, or whether it merely passes its time in search of food.

The congregation of swallows this year (1834) has been unusually early. On the 10th of August a prodigious number of them assembled about the stud-house in Hampton Court Park. They covered the house and the tops of some trees, while at the same time the air appeared to be filled with them. About five o'clock they all disappeared. This early departure of our summer guests must be occasioned by a want of food, as the weather has been unusually warm and pleasant.

It is extraordinary that so many persons, both in modern and more remote times, should so pertinaciously have entertained the idea that swallows either pass the winter at the bottom of some deep * lake or

* When I was this summer (1837) in Cumberland, I was assured that three swallows had been seen early in the spring to

river, or else hide themselves in some cliffs or caverns :—

'Cum glaciantur aquæ, scopulis se condit hirundo,
'Verberat egelidos garrula vere lacus."

The idea of swallows hiding themselves in caverns is stated as a fact by a French writer :—

'Entre la ville de Caen et la mer, le long de la 'rivière d'Orne, nous avons beaucoup de cavernes, 'ou l'on a quelque fois trouvé, pendant l'hiver des 'pelotons d'hirondelles suspendus à la voute, en forme 'de grappes.'

Several swallows have since been seen in this neighbourhood as late as the second of November, this year (1834). Owing to the peculiar mildness of the season they have in several places attempted to rear a late brood. When, however, the setting in of cold nights, or a want of food, has warned them to depart, instead of leaving their young to starve in the nest, they have been seen, with the assistance of other swallows, to eject them from the nest, in order that they might meet a more speedy death on the ground. Wasps are known to do the same thing when they can no longer procure food to feed the young brood.

emerge from Windermere Lake. I mention what I heard in order to shew that the idea that they hide themselves in water is still a prevalent one.

'The monarch Oak, the patriarch of trees,
'Shoots rising up, and spreads by slow degrees;
'Three centuries he grows, and three he stays
'Supreme in state; and in three more decays.'
DRYDEN.

AMIDST 'the crowd, the hum, the shock of men,' I frequently long to 'converse with Nature's charms, 'and view her stores unrolled;' I have, however, little opportunity of doing this, except that now and then I am enabled to visit some of the more secluded parts of Windsor Great Park. Here there is that 'prodigality of shade' which I delight in, and which is afforded by some of the most beautiful beech trees in England. The venerable old pollards however, interest me more than any thing else in the park. In looking at them my mind is imperceptibly carried back to the many interesting historical facts which have happened, since they first sprung from the earth. I can fancy that our Edwards and Henrys might have ridden under their branches,—that they had been admired by Shakespeare, and that Pope, whose early youth was passed in the neighbourhood, had reposed under their shade. At all events it is impossible to view some of these 'Sires of the Forest,' without feeling a mixture of admiration and wonder. The size of some of them is enormous: one beech tree near Sawyer's Lodge in Windsor Great Park, measuring, at six feet from the ground, thirty-six feet

round. It is now protected from injury, and nature seems to be doing her best towards repairing the damage which its exposure to the attacks of man and beast have produced. It must once have been almost



hollow, but the vacuum, (as may be seen by the foregoing sketch), has been nearly filled up. One might

almost fancy that liquid wood, which had afterwards hardened, had been poured into the tree. The twistings and distortions of this huge substance have a curious and striking effect, and they might be imagined to have been produced by a convulsive throe of nature. There is no bark on this extraneous substance, but the surface is smooth, hard, and without any appearance of decay.

There are two magnificent old oaks near Cranbourne Lodge in Windsor Great Park,—one of them is just within the park paling and about 300 yards from the Lodge, and the other stands at the point of the road leading up to it. The former, at six feet from the ground, measures 38 feet round. An old man, who was working near it, told me that it was *talked of* in the History of England, but I have not been able to ascertain that any historical facts are connected with it. The venerable appearance of this fine old oak, 'his high top bald with dry antiquity,'—the size and expanse of its branches—the gnarled and rugged appearance of its portly trunk, and the large projecting roots which emanate from it, fill the mind at once with admiration and astonishment. By the good taste of Lord Duncannon this beautiful and venerable tree is now properly protected.

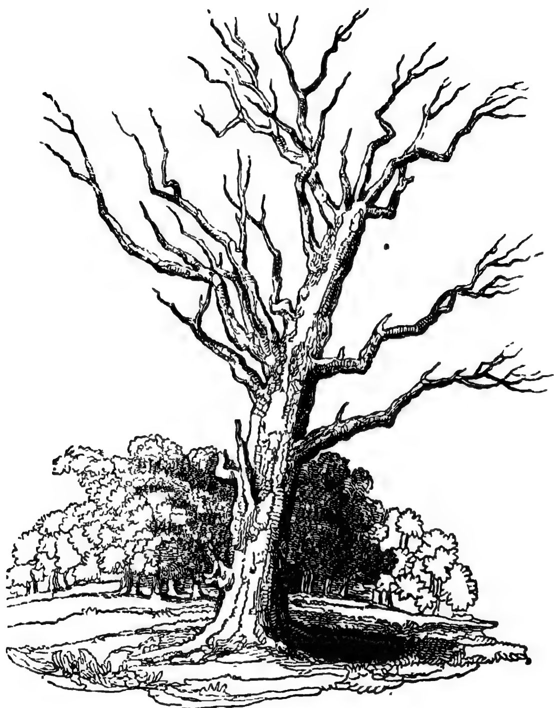
The other tree, nearer to Cranbourne Lodge, is thirty-six feet in circumference at four from the ground, and may be considered as almost coeval with the one I have just been attempting to describe. Departing from her usual practice, Nature, in this instance, seems only in some respects to have resumed



her vigour. This may be seen by a number of little feathering branches which have been thrown out of the stem. Another old pollard, not far from it, has only one live branch left—a branch which seems to flourish amidst decay. Hollies, thorns, and here and there a stunted hornbeam, look as if they might have

been placed there for the purpose of keeping off any unhallowed intruders on the retirement of these venerable patriarchs, who, in return. seem to stretch forth the horizontal twistings of their large extended branches to afford protection and shelter to their more humble brethren of the forest.

The most interesting tree, however, at Windsor, for there can be little doubt of its identity, is the celebrated Herne's oak. There is indeed a story prevalent in the neighbourhood respecting its destruction. It was stated to have been felled by command of his late Majesty George III. about fifty years ago, under peculiar circumstances. The whole story, the details of which it is unnecessary to enter upon, appeared so improbable, that I have taken some pains to ascertain the inaccuracy of it, and have now every reason to believe that it is perfectly unfounded. Herne's oak is probably still standing, at least there is a tree which some old inhabitants of Windsor, consider as such, and which their fathers did before them—the best proof perhaps of its identity. In following the footpath which leads from the Windsor road to Queen Adelaide's Lodge, in the Little Park, about half way on the right, a dead tree may be seen close to an avenue of elms. This is what is pointed out as Herne's Oak. I can almost fancy it the very picture of death. Not a leaf—not a particle of vitality appears about it. 'The hunter must have blasted it.' It stretches out its bare and sapless branches, like the skeleton arms of some enormous giant, and is almost fearful in its decay. None of



the delightful associations connected with it have however vanished, nor is it difficult to fancy it as the scene of Falstaff's distress, and the pranks of the 'Merry Wives.' Among many appropriate pas-

sages which it brought to my recollection was the following:—

———'there want not many that do fear
'In deep of night to walk by this Herne's Oak.'

Its spectral branches might indeed deter many from coming near it ' 'twixt twelve and one.'

The footpath which leads across the park is stated to have passed in former times close to Herne's oak. The path is now at a little distance from it, and was probably altered in order to protect the tree from injury. I was glad to find 'a pit hard by,' where 'Nan 'and her troop of fairies, and the Welch Devil Evans,' might all have 'couch'd,' without being perceived by the 'fat Windsor stag' when he spake like 'Herne 'the hunter.' The pit above alluded to has recently had a few thorns planted in it, and the circumstance of its being near the oak, with the diversion of the footpath, seem to prove the identity of the tree, in addition to the traditions respecting it:—

'There is an old tale goes, that Herne the hunter,
'Sometime a keeper here in Windsor forest,
'Doth all the winter time, at still midnight,
'Walk round about an oak, with great ragg'd horns,
'And there he blasts the tree.'

The last acorn I believe which was found on Herne's Oak was given to the late Sir David Dundas of Richmond, and was planted by him on his estate in Wales where it now flourishes, and has a suitable inscription near it. I have reason to think that Sir David Dundas never entertained a doubt of the tree I have referred to, being Herne's Oak, and he had the best op-

portunities of ascertaining it. In digging holes near the tree lately, for the purpose of fixing the present fence round it, several old coins were found, as if they had been deposited there as future memorials of the interest this tree had excited.

A little further on, to the left, where the ground somewhat rises, is a fine old pollard, which still flourishes; there being only one dead branch, which projects from the centre of the foliage. It is a fine specimen of old age in a tree. It measures twenty-seven feet round the middle of the trunk.

Not a great way from this tree stands Queen Adelaide's Cottage, a charming and peaceable retreat. It is impossible to view the grounds which are attached to the Cottage, without perceiving that Her Majesty has a great fondness for what is beautiful in Nature. Every thing has been done here with perfect good taste and strict propriety, and the most critical Landscape Gardener would have found it difficult to have altered any thing for the better. Every thing in the cottage or about the grounds is in character. Here is no attempt at splendour, but the place altogether has a smiling and cheerful appearance.

Nothing of the Castle is to be seen from the Cottage. On leaving the grounds, however, and getting again into the open part of the park, that noble edifice presents itself—a fit place for the residence of Kings. The avenue, or long walk, as it is called, in Windsor Great Park, is very striking. I trust, however, that I shall be excused in venturing an opinion, that the Lodges now building (with perfect good

taste as to their style) have not been kept sufficiently out of sight, or rather have been intruded too much on the vista from the Castle to the end of the avenue. I know of few sights more beautiful than the view from the top of the long walk, and the beech trees which flourish in that part of the park are equalled by few in the kingdom; indeed I have never seen any trees grow in a more picturesque manner. I never see the fine arches produced by an avenue of beeches, without thinking of what Dr. Warburton has said on the subject, in his notes on Pope's Epistles. He remarks that no attentive observer ever viewed a regular avenue of well-grown trees, intermixing their branches over head, but it presently put him in mind of the long vista through a Gothic Cathedral; or ever entered one of the larger and more elegant edifices of this kind, but it presented to his imagination an avenue of trees. Cowper has delightfully adopted this idea in his Task:—

' How airy and how light the graceful arch,
' Yet awful as the consecrated roof
' Re-echoing pious anthems! while beneath
' The chequered earth seems restless as a flood
' Brushed by the wind. So sportive is the light
' Shot through the boughs, it dances as they dance,
' Shadow and sunshine intermingling quick,
' And darkening and enlightening, as the leaves
' Play wanton every moment, every spot."

The fern in the Park has a beautiful appearance at this time of the year (the end of September) and at a little distance looks like furze, or gorse, in full blos-

som. This yellow tint, which is greatly heightened towards the evening, contrasts finely with the first slight autumnal colouring of the beech trees, whose white trunks and pendant branches add not a little to the landscape. The still lighter brown of the grass, after so much dry weather, forms another contrast, covered as it sometimes is with a fine herd of deer; while the thorns, blushing, as they appear to do with their load of crimson berries, glow with an increase of lustre as the beams of a setting sun rest upon them.

The drive from this part of the park to Virginia Water, and from thence through the Black-ness gate, is exceedingly beautiful. The clumps of beech trees, the oak wood, together with the whole of the scenery, form a charming picture. The Lodge occupied by His late Majesty has been pulled down, with the exception of the banquetting room and the conservatory.

On the descent of the hill, leading to the Virginia Water, stands a fine old beech tree,—a study for a painter. Its roots appear above the soil with curious contortions, and add very much to the picturesque appearance of the tree.

The first view of the Virginia Water is very striking. The fishing temple—the tents—the lake and the cottage, all produce a rich and enlivening effect. The Belvidere and the Obelisk are happily placed, and a pretty frigate in miniature adds to the charm of the scene. The fishing boats are fitted up with every comfort and convenience, and are exceedingly well

kept. The only regret I felt on visiting this charming spot, was not being allowed to bring my trolling rod with me.

His Majesty's magnificent present to the Zoological Society, of the beasts lately kept in this park, has deprived visitors of one of the objects of curiosity which brings them to Windsor. The animals however are more accessible in the Regent's Park than they were at the Sandpit Gate. I was informed that the person who had the care of them once very nearly lost his life. The circumstance was as follows. He not unfrequently allowed the boa constrictor to enjoy a certain degree of liberty by turning it loose in his sitting room. On one of these occasions, the animal wound himself round the body of the keeper, and would probably have crushed him to death in a few moments, had not his cries brought some one to his assistance, when the animal was disengaged. The snake, I believe, cannot apply the whole force of its body till the tail is firmly attached to some object, and then, having obtained a purchase, as it were, the *crush* is instantaneous.

I must now bid adieu to

> ' Thy forests Windsor, and thy green retreats,
> ' At once the monarch's and the muse's seats.'

But the Forest is now, alas! no more. The hundred miles of green drive which were kept up for the convenience of his late Majesty George the Third at a trifling expence, and where he followed his stag hounds, have all disappeared. Perhaps no

monarch in Europe could have boasted of such an appanage to the seat of royalty. The Forest has been divided and subdivided, and scarce a vestige of it in its original state, with its 'lawns and opening glades,' is left, except what has been apportioned to the crown, adjoining the Great Park.

> 'This wither'd tree was once in prime;
> 'Its branches brav'd the sky—' CUNNINGHAM.

I HAVE devoted two or three days of the present summer to visiting some of the finest old trees within a morning's drive of my residence, and have derived much pleasure from these little excursions. It is quite impossible to view these relics of antient times without feelings of veneration and respect;

> 'I doe love such ancient ruines,
> 'I never look upon them but I read
> 'Some reverend historie.' WEBSTER.

At the north-west angle of Richmond Green, may now be seen the trunk of an antient elm, called "the "Queen's Elm," from having, it is said, been a favourite tree of Queen Elizabeth. Some kind hand, with equal good taste and feeling, has planted ivy round its naked trunk, and the inhabitants of Richmond, much to their credit, have protected it from injury by surrounding it with a paled fence. The ivy has thriven, and the lately naked trunk is now richly covered with a verdant mantle.

At the entrance of the old palace at Kew, from the barge walk, may also be seen a lime tree, not so curious from its size, as from the singular appearance of its stem, which is deeply indented with seams, as if several branches had sprung up from the ground and

been afterwards joined together. This tree was frequently noticed and admired by His late Majesty George the Third, and stands in the angle of two walls, a circumstance which detracts much from its beauty.

The tree however which fills me with more admiration than any other, is the old oak near the Ranger's stables in Hampton Court Park: it has already been noticed by me. At five feet from the ground it measures 36 feet in circumference. The trunk shews but few symptoms of decay, having been for some time secured from injury by a strong fence.

In the same park stands King Charles' swing—an elm tree curious from its size and shape. At 8 feet from the ground, it measures 38 feet in circumference.

On the lawn of Bushy House may be seen an antient and venerable oak of a most picturesque appearance. It was long under the protection of His late Majesty, and is no small ornament to the place. Some traditionary stories are said to be attached to it.

I have already mentioned that the fine Spanish chesnut tree standing near Bushy House, and said to have been planted by Charles the Second, was perhaps the first of the kind in this country. I have since found that I was mistaken, having been assured that the oldest Spanish chesnut tree in England is in Lord Ducie's Park, Gloucestershire, under which, according to an engraved inscription upon it, King John held a Parliament. Under a picture of it at Tortworth

Court is inscribed as follows:—' A Spanish chesnut ' tree at Tortworth, Gloucestershire, nineteen yards ' in circumference, mentioned by Sir Thomas Atkyns ' as a famous tree in King John's time, and in Eve- ' lyn's Sylva for its magnitude in King John's time.' Tradition carries this tree back to the days of the Saxon King Egbert who reigned from 799 to 837. It still lives and bears fruit, some of which was sent to me last autumn. I may here mention that in falling and sawing up some of the old trees in Sherwood Forest, not a long time ago, the letters K I with a crown, were distinctly visible in the centre of them. This would lead one to suppose that they were timber trees in the reign of King John, and were not too much decayed to be called so at the time they were felled. Supposing, therefore, they were marked in the year 1200, and that they were 100 years old at that time, they would be 730 years old when they were cut down. It is not going too much out of the way to suppose, that if they had been suffered to remain standing, they would have lived from 200 to 300 years longer without becoming completely decayed. This would bring the age of an oak to 1000 years.

This fact of the mark I have referred to being found in the centre of the Sherwood Forest oaks is not a little remarkable, and in some degree identifies the age of the tree. That substances placed either in a hole or the fork of a tree, will, in process of time find their way into the centre of it, cannot be doubted. An instance of this was communicated to

me by the head carpenter of Hampton Court Gardens, a person on whose accuracy and veracity I can place every reliance, and I give the account in nearly his own words. He informed me that hearing from some of his brother workmen that in sawing up the butt of a large ash tree, they had found a bird's nest in the centre of it, he immediately went to the spot, and found the ash cut in two longitudinally on the saw-pit, and the bird's nest nearly in the centre of the diameter. The nest was about two thirds of a hollow globe, and composed of moss, hair, and feathers, all seemingly in a fresh state. There were three eggs in it, nearly white and somewhat speckled. On examining the tree most minutely, with several other workmen, no mark or protuberance was found to indicate the least injury. The bark was perfectly smooth, and the tree quite sound. In endeavouring to account for this curious fact, we can only suppose that some accidental hole was made in the tree before it arrived at any great size, in which a bird had built its nest and forsaken it, after she had laid three eggs. As the tree grew larger, the bark would grow over the hole, and in process of time the nest would become embedded in the tree.

I have already referred to a few of the fine old trees in Windsor Great Park, but I must not omit to mention the large vine in the gardens attached to Cumberland Lodge in that park. This vine is but little known, but it is considerably larger than the one at Hampton Court, filling a house 135 feet long, and producing last autumn a prodigious crop of grapes.

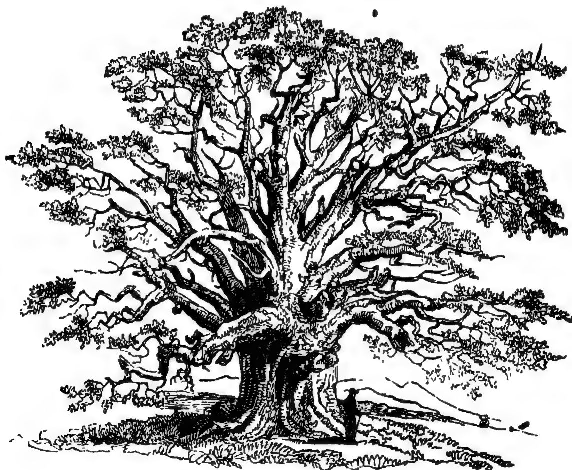
The large thorn in Dalham Park, Suffolk, (of which a sketch is here given), is also well worthy of notice,



both from its great size, its antiquity, and the curious manner in which it grows. It also affords another proof of the accuracy of the remark I made elsewhere, that when the thorn arrives at a certain age, it separates into distinct stems.

It is perhaps not generally known that one of the elm trees standing near the entrance of the passage leading into Spring Gardens, was planted by the Duke of Gloucester, brother to Charles the First. As that unfortunate monarch was walking with his guards from St. James's to Whitehall, on the morning of his execution, he turned to one of his attendants and mentioned the circumstance, at the same time pointing out the tree.

Few trees were more interesting than the Golynos Oak; this wonderful tree grew on the estate from which it takes its name, about four miles from the sea-port town of Newport, in the county of Monmouth. It was purchased by the late Thomas Harrison, Esq. (many years His Majesty's Purveyor of Plymouth Dockyard and Dean Forest), in the year 1810, for one hundred guineas, and was felled and



converted by him the same year. Five men were each twenty days stripping and cutting it down; and a pair of sawyers were constantly employed one hundred and thirty-eight days in its conversion. The expense of stripping, felling, and sawing, (exclusive

of superintending the conversion or hallage of any part of it), was eighty-two pounds. It was felled in several parts, and stages were erected for the workmen to stand on to cut down the valuable limbs. Previous to being felled it was divested of its brushwood, which was placed as a bed, to prevent the timber from bursting in falling. The main trunk of the tree was nine feet and a half in diameter, and consequently no saw could be found long enough to cut it down; two saws were therefore brazed together. In cutting the main trunk through, a stone was discovered six inches in diameter, six feet from the butt, and three feet in a diametrical direction from the rind, round which the timber was perfectly sound. The rings in its butt being reckoned, it was discovered that this tree had been improving upwards of four hundred years! and, as many of its lateral branches were dead, and some broken off, it is presumed it must have stood little short of a century after it had attained maturity. When standing, it overspread four hundred and fifty-two square yards of ground. Its produce was as follows:

	Feet.
Main trunk, at ten feet long	450
One limb	472
One ditto	355
One ditto	235
One ditto	156
One ditto	113
One ditto	106

Six smaller ditto	413
Dead limbs of the size of timber . . .	126
Total quantity of timber . .	2426

Its conversion was—the main trunk cut into quarter boards and coopers' stuff; the limbs, one upper piece stem for a one hundred gun ship, one ditto fifty guns, one other piece seventy-four guns, three lower futtocks each one hundred guns, one fourth futtock one hundred guns, one ditto seventy-four guns, one ditto forty-four guns, one floor timber seventy-four guns, one second futtock one hundred guns, and about twenty knees, all of which were large enough for the navy. The heavy body bark was three inches thick. When all its parts were brought to market, they produced nearly six hundred pounds!

'And often by the murm'ring rill
' Hear the thrush while all is still.' DYER.

I NOW and then visit a copse of young trees and underwood, sometimes of an evening, and never at this time of the year (the end of September) without being struck with the variety of pleasing sounds which I hear as soon as I enter. It is on the slope of a rising piece of ground—a path or two has been cut through it, and a little purling rill trickles gently between two mossy banks. With whatever silence I may enter the copse, a note of alarm is immediately given, and this is generally by the black-bird, except indeed a wood-pigeon happens to have settled in a tree close to me, in which case the loud flapping of her wings as she takes flight is sufficiently understood by all the inmates of the wood. The rabbits scud away from the path—the pheasants quit it at the same time to seek shelter in the underwood, while the jay screams in notes which are any thing but melodious, and which are answered by the whole family as they fly from one tree to another. The magpie, that most cautious and cunning of birds, may be seen quitting the neighbourhood, while I am there, chattering now and then, and communicating all her forebodings of evil as she flies along. If I stand still for a few minutes, the disturbance which

my presence had excited soon ceases. I am stationed under an old decayed oak—

> 'on whose sprays,
> 'The throstle chaunts her roundelays,'

and I can then see and listen to all that is going forward. The pheasants return to the ride, and at the same time the rabbits make their re appearance, rising on their hind legs, and looking about in every direction to see if danger is near. After they have grazed for a short time, little skirmishes take place between them, two or three meeting and springing up together, and then chasing each other in circles. Above my head a family of tit-mice are seeking for insects under the branches of trees, hanging with their backs downwards, and now and then uttering a note which is understood by all the party. They are odd, amusing birds. The heavy flight of the wood-pigeon is again heard as she returns to her favourite tree, followed at intervals by numbers of her congeners: and a large flock of starlings settle in the alders which grow in the lower part of the copse. The sudden whirls they make, and their chattering noise, may be heard at some distance, and the latter is kept up till late in the evening. The distant call of the partridge, the abrupt crow of the pheasant as he goes to roost, and the cawing of rooks as they return—

> 'To fly in circles o'er yon distant wood,'

are amongst the pleasing sounds of a fine autumnal evening.

Returning from my walk, I am struck with the varied shades one sees on the trees at this season of the year, the beauty and elegance of the foliage, the richness of the colours, those golden tints which a painter dare not attempt to imitate. They are seen under the arch of yonder bridge, and sparkle on the top of that embrowned beech-tree.

> ' Who can paint
> ' Like Nature? Can imagination boast,
> ' Amid his gay creation, hues like these?
> ' And can he mix them with that matchless skill,
> ' And lay them on so delicately fine,
> ' And lose them in each other ——— ?'
>
> THOMSON.

I enjoy these ' sylvan strolls.' They awaken all ones best feelings. The ' gleams and glances of na-' ture,' leave a sunny recollection on the mind, which can only be appreciated by those who have felt them. The dreary wild, the sedgy pool, parks, chases, heaths, all in their turn either entertain the imagination, or afford new subjects for contemplation and enjoyment.

The more I reflect upon the order and arrangements of Providence in the works of creation, the more reason I find to admire them. My friend Mr. Yarrell has the credit of being the first to bring under the notice of naturalists the fact that the tips of the bills of birds, before they are hatched, are strengthened by a deciduous scale, which enables them to perforate and burst the shell more rapidly. The apparently useless fungus which I see near me

affords food for the beetle, and the dry tuft of grass growing against the trunk of an old oak is a place of retreat and security for the chrysalis of a moth. Yonder woodpecker is enabled to run up trees perpendicular in search of those insects which are necessary for its existence, in consequence of being furnished with peculiarly stiff, sharp-pointed feathers in its tail. These feathers are bent inwards, and the bird, having besides strong claws which are much hooked, two of which are placed forward and two backward, is able to cling to trees with perfect ease.

I am aware that these remarks may appear to some persons minute and trifling, but I must confess, that little facts and circumstances, in the economy of Almighty God, have irresistible charms for me, and serve, like others more prominent, to shew the perfect and beautiful manner in, and for, which every thing has been created. In contemplating them, what a delightful lesson may we not learn! We may find in them the strongest testimonies of the truth of revelation, and the superintendence of an all wise and benevolent Creator. It has been well said that in the Book of Nature is written in the plainest characters the existence of a God, which revelation takes for granted—of a God how full of contrivance! how fertile in expedients! how benevolent in his ends! At work every where—every where, too, with equal diligence; leaving nothing incomplete—finishing 'the hinge in the wing of an insect,' as perfectly as if it were all he had to do—unconfounded by the multiplicity of objects, undistracted

by their dispersion, unwearied by their incessant demands on him, fresh as on that day when the morning stars first sang together, and all nature shouted for joy.

END OF VOL. I.

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